FINAL REPORT

SPS-8 PROJECT 2808: ENVIRONMENTAL EFFECTS IN THE ABSENCE OF HEAVY LOADS SR-315, WESTBOUND PANOLA COUNTY, MISSISSIPPI

FHWA/LTPP

SOUTHERN REGION COORDINATION OFFICE

February 1998

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FINAL REPORT - SPS-8 PROJECT 2808

STUDY OF ENVIRONMENTAL EFFECTS IN THE ABSENCE OF HEAVY LOADS SR-315, WESTBOUND PANOLA COUNTY, MISSISSIPPI

INTRODUCTION

In 1987, Congress authorized the Strategic Highway Research Program (SHRP). SHRP's purpose was to conduct focused research on asphalt, concrete, pavement performance, structures, and highway operations. In 1992, funding for SHRP ended. The Long Term Pavement Performance (LTPP) program (a portion of the SHRP studies) continued to be funded through the Intermodal Surface Transportation Efficiency Act (ISTEA). Operation of the LTPP program was transferred to the Federal Highway Administration (FHWA) in June of 1992.

As part of the LTPP studies, sections of highway are being selected for Specific Pavement Studies (SPS). SPS sites have been incorporated into new and rehabilitation projects throughout the nation. This report signifies the inclusion and construction of an SPS-8 site located on SR-315 in Panola County, Mississippi.

SPS-8 General Experiment

The overall objective of this experiment is to measure the deterioration in pavement performance attributable to the environment in the absence of heavy loads. At present, highway agencies lack sufficient information on the serviceability loss in pavements due to the environment. Therefore, a controlled experiment is necessary to answer the following questions:

1. To what extent does the influence of environmental conditions, temperature, and moisture affect pavement serviceability?

2. What is the influence due to the climatic region on environmentally-induced serviceability loss?

3. What is the influence of pavement type and structure on environmental serviceability loss?

4. What is the effect of very low traffic on the long-term performance of pavement materials?

The proposed experiment encompasses both flexible and rigid pavement structures built on conventional, non-drained base materials. The typical subgrades will be either coarse, inactive fine-grained or active fine-grained soils. Other site-related factors include pavement type,

Table 1. Experimental Design for SPS-8, Study of Environmental Effects in the Absence of Heavy Loads

PAVEMENT STRUCTURE [1, 2]			FACTORS FOR MOISTURE, TEMPERATURE, AND SUBGRADE TYPE [3]																							
			WET										DRY													
Type	Surface Thickness in.	Base Thickness in.	FREEZE						NO-FREEZE						FREEZE						NO-FREEZE					
			Active		Fine		Coarse		Active		Fine		Coarse		Active		Fine		Coarse		Active		Fine		Coarse	
FLEXIBLE	4	6	X		X		X		X		X		X		X		X		X		X		X		X	
	7	12	X		X		X		X		X		X		X		X		X		X		X		X	
RIGID	8	6		X		X		X		X		X		X		X		X		X		X		X		X
	11	6		X		X		X		X		X		X		X		X		X		X		X		X

Notes:
1. Dense-graded HMAC and jointed plain concrete (JPC) for flexible and rigid pavements, respectively.
2. Dense-graded aggregate base.
3. Active soil can be either frost susceptible or swelling type relative to the climatic zone.

o Flexible and rigid pavement sections may be constructed at the same site.

surface thickness, base thickness, and climatic zones. Table 1 depicts this information in tabular form.

Traffic is a key factor in this experiment. Since the objective of this experiment is to measure pavement deterioration in the absence of heavy loads, SPS-8 sites must be located where low truck traffic volumes occur. However, the *total* absence of traffic is equally undesirable, therefore, an eligible test site candidate must have an expected traffic volume in the study lane of at least 100 vehicles per day, but not more than 10,000 equivalent single axle loads (ESAL) per year. The actual site-specific traffic loading will be determined from Weigh-in-Motion (WIM) and Automatic Vehicle Classification (AVC) measurements.

The interaction of traffic, structural parameters, and climatic factors will directly effect the results of this experiment. With the implementation of this SPS-8 project being constructed in a controlled manner, the weather is an uncontrolled variable that will ultimately effect the pavement performance. Therefore, an Automated Weather Station (AWS) is placed at or near the SPS test site and will monitor the weather throughout the duration of the experiment. The AWS will collect data on wind velocity and direction, snowfall, rainfall, temperature, and humidity. This data will be collected periodically from the AWS and will be used in the analysis of the project results.

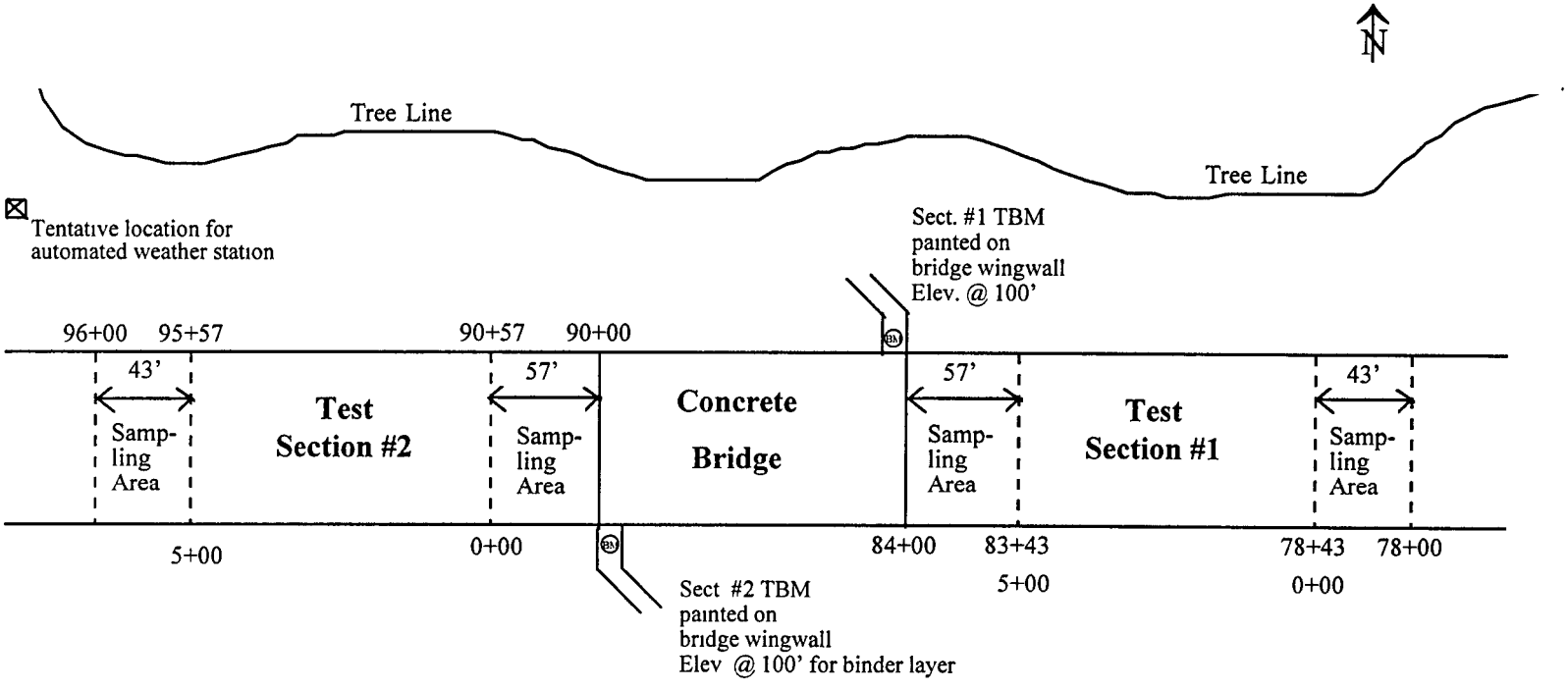
Selection/Nomination of SR-315

This project was first offered for consideration by the State of Mississippi in December 1995. After reviewing the details provided by the state on this project, and preparation of a tentative layout of the test sections, the project was officially nominated in February 1996. Appendix A contains the nomination forms which provide specific information on the project location, significant dates, traffic information and the state agency's structural pavement design for the SPS-8 project. The site nominated will consist of a newly constructed bridge and the adjoining sections of roadway located on SR-315 in Panola County, Mississippi.

PRECONSTRUCTION MONITORING

On 16 September 1996, the test sites were established and marked off by Mark Gardner of the LTPP Southern Regional Coordination Office (SRCO) and John Avent of the Mississippi Department of Transportation (MDOT). Test section 280801 was laid out on the east side of the bridge and test section 280802 was laid out on west side of the bridge. The layout of the test sections is shown in figure 1. Preconstruction activities included collecting bulk samples and nuclear density readings for the dense-graded aggregate base (DGAB) and subgrade layers, P59 testing of the DGAB, and collection of rod and level shots to establish a baseline for future layer measurements.

Initially, the Falling Weight Deflectometer (FWD) was not able to get the desired readings for the P59 testing. The P59 testing protocol calls for load readings in the range of 1500 to 5000 pounds. The FWD operator recorded loads in the 3500 to 6500 range. A light rain held up sampling and testing activities for a short while. After the rain stopped, sampling and testing activities continued.



Test Section #2

2" AC Surface	Layer #4
5" AC Binder	Layer #3
12" DGAB	Layer #2
Subgrade	Layer #1

4" cores were taken 12' on either side of the test sections.

Test Section #1

2" AC Surface	Layer #4
2" AC Binder	Layer #3
8" DGAB	Layer #2
Subgrade	Layer #1

Figure 1. Layout of Test Sections
Mississippi SPS-8 (2808)

The next day, sampling and testing activities were resumed. An observation was made that the top layer of material was actually the base material and not the subgrade layer. Therefore, a small portion of the base layer was excavated in order to collect the subgrade samples and nuclear density readings. Also, the buffers on the FWD unit were changed out and the succeeding load readings were in the range called for in the P59 testing protocol.

CONSTRUCTION MONITORING

The asphalt plant was located on Hwy. 51 near Scobey, Mississippi. The plant was approximately 40 miles south of the project site resulting in a haul time of approximately 45 minutes.

On 1 October 1996, a 3-inch layer of HMAC was placed on the west side of the bridge. The HMAC layer was substituted for an asphalt concrete base layer. The HMAC had been batched using the same mix design as the HMAC binder mix to be placed the following day.

2 October 1996 was the planned starting date for the construction of the SPS-8 test sites. Present this day was the subcontractor, John Avent of MDOT, and Zane Dunnam of the LTPP SRCO. It became apparent after the preconstruction sampling and testing efforts that more DGAB had been added to the east side of the bridge. Therefore, the subcontractor project manager announced that this day would be dedicated to fixing some soft spots in the newly added DGAB, and we should expect the HMAC binder to be place around 10:00 a.m. the next day. As this was the case, only density measurements on the 3-inch layer of HMAC (placed the previous day) were collected.

Planned activities did not go as expected the following day. When MDOT and SRCO personnel arrived at the project site around 8:00 a.m., the subcontractor already had asphalt trucks (carrying HMAC binder mix) lined up on the east side of the bridge. While the Blaw-Knox asphalt laydown machine was preheated to operating temperatures, an attempt was made to retrieve rod and level shots on the newly added and compacted DGAB layer. After only a few elevation readings were collected, the battery on the laser level went dead. Before a replacement level could be obtained, the subcontractor proceeded with the placement of the HMAC binder mix. Therefore, elevation measurements on the DGAB layer were not collected. This was unfortunate because there is now no way of determining the average thickness of the binder layer within test section 280801, nor are there any nuclear density measurements for this layer.

After monitoring the placement of the HMAC binder mix layer, the only irregularity found was a slight depression near station 5+00 in test section 280801. This was probably due to the soft spots located in the DGAB the day before. Rod and level shots along with nuclear density measurements were obtained, and still pictures of the job site were taken. Let it be noted that the level and nuclear density gauge were different than the ones previously used on the base layer. This introduces a slight error into overall elevation and density calculations. The only other deviation from planned procedures happened at the plant. Although the right amount of material was collected for the Material Reference Library (MRL), only ⅓ of the material needed for the Mississippi State Laboratory (MSL) was sampled. This will result in a shortage of material when running multiple lab tests, and the statistical analysis of the lab tests will not be as complete.

The HMAC surface layer was to be placed the following day. Due to time restrictions and other obligations, MDOT and SRCO personnel were not present to witness the placement of the HMAC surface layer. The corresponding material was, however, sampled at the asphalt plant with again only ⅓ of the material required being sampled for the MSL. Sample requirements for the MRL were obtained in full.

POSTCONSTRUCTION MONITORING

On 22 October 1996, postconstruction monitoring was underway. Eight 4-inch cores were obtained from each test section, and since the elevation and density measurements had not been collected for the HMAC surface mix layer, these measurements were collected this day as well.

A distress survey was also completed. Due to the fact that the roadway was newly constructed, there were no signs of distress evident in either test section. It should be noted that on this day, a subcontractor was installing guard-rail, which connected to the bridge. Damage to the HMAC surface layer was evident where the guard-rail was anchored into the roadway. The HMAC was severely cracked and left untreated. This might influence the test sections in the future.

At the time of this report, transverse profile data, FWD data, and profilometer data remain to be collected on the test sections.

An Automated Weather Station (AWS) and the SHRP signing are the only items that are yet to be constructed and installed on this SPS-8 site.

SUMMARY

In summary, this report denotes the implementation of an SPS-8 project located in the westbound lanes of SR-315, in Panola County, Mississippi. The objective of this experiment is to measure the deterioration in pavement performance due to the environment in the absence of heavy truck loads. This experiment will take into consideration the effects of pavement type, specific design features, and pavement thickness within the SPS-8 site test sections.

APPENDIX A

PROJECT NOMINATION FORMS AND CORRESPONDENCE

Brent Rauhut Engineering Inc.

31 January 1996

Mr. Monte Symons
Pavement Performance Division - LTPP (HNR-40)
Federal Highway Administration
Turner-Fairbanks Highway Research Center
6300 Georgetown Pike, Room F-215
McLean, Virginia 22101

Subject: Mississippi SPS-8 Nomination

Dear Monte,

Attached are the Candidate Project Nomination and Information Forms for an SPS-8 project in Mississippi. While we received this nomination in early December, there has been on-going correspondence related to the shoulders along this project. While the plans for this project include granular shoulders, Mississippi has agreed to seal the surface along the length of the test sections.

As you will note from the "Significant Dates", this project will be let in February. Your prompt consideration of this project would be greatly appreciated. Please do not hesitate to contact me if you need any additional information.

Sincerely,

Mark P. Gardner, P.E.
Project Engineer, SRCO

MPG:dmj

Attachment: As stated.

c.w/Att: John Miller, PCS/LAW-Kennesaw, GA
Al Crawley, MS-DOT
Morris Reinhardt, RE/SRCO

8240 Mopac, Suite 220 • Austin, Texas (512) 346-0870 • FAX (512) 346-8750

NAME	INFO	ACTN	COPY
BR			
MR		✓	
MR			
File:			

RECEIVED DEC 04 1995

SPS-8 Nomination Form/10 July 91

SHEET A. SPS-8 CANDIDATE PROJECT NOMINATION AND INFORMATION FORM

STATE MISSISSIPPI SHRP SECTION NO. 280800

PROJECT LOCATION

ROUTE NUMBER 315

ROUTE SIGNING [ ] Interstate [ ] U.S. [X] State [ ] County
Other

* PROJECT LOCATION Start Milepost N/A End Milepost N/A
Start Milepost End Milepost

DIRECTION OF TRAVEL [X] North B. [ ] South B. [ ] West B. [ ] East B.

PROJECT LOCATION DESCRIPTION APPROXIMATELY 1 1/2 MILES EAST OF THE TOWN OF SARDIS AT OIL CREEK IN NORTHWEST MISSISSIPPI.

COUNTY PANOLA
HIGHWAY AGENCY DISTRICT NUMBER 2
SHRP ENVIRONMENTAL ZONE
[ ] Wet Freeze [X] Wet No-Freeze [ ] Dry Freeze [ ] Dry No-Freeze

SUBGRADE SOIL CATEGORY
[ ] Active [ ] Fine Grained [X] Coarse Grained

TYPE OF ACTIVITY N/A DEGREE OF ACTIVITY N/A

[ ] Swelling [ ] Frost Heave [ ] Low [ ] Moderate [ ] High

SIGNIFICANT DATES

LATEST DATE OF APPROVAL NOTIFICATION FROM SHRP	
CONTRACT LETTING DATE	FEBRUARY 96
ESTIMATED CONSTRUCTION START DATE	APRIL 96
ESTIMATED DATE TEST SECTIONS OPENED TO TRAFFIC	NOVEMBER 96
ESTIMATED CONSTRUCTION COMPLETION DATE	NOVEMBER 96

PROJECT DESCRIPTION

PROJECT TYPE [X] New Route [ ] Removal and Reconstruction
[ ] Parallel Roadway
Other REPLACEMENT OF BRIDGE AND ROADWAY PARELLEL TO EXISTING SITE.

DESIGN TRAFFIC DATA

ANNUAL AVERAGE DAILY TRAFFIC (TWO DIRECTIONS)	2610
% HEAVY TRUCKS AND COMBINATIONS (OF AADT)	5
ESTIMATED 18K ESAL RATE IN STUDY LANE (1,000 ESAL/YR)	12
TOTAL DESIGN 18K ESAL APPLICATIONS IN DESIGN LANE	12
DESIGN PERIOD (Years)	10

* STATION LIMITS = 75+00/102+37.27

SHEET B. SPS-8 CANDIDATE PROJECT NOMINATION AND INFORMATION FORM

STATE MISSISSIPPI SHRP SECTION NO. 280800

AGENCY'S PAVEMENT STRUCTURE DESIGN FOR SITE

LAYER[1] NO.	LAYER[2] DESCRIPTION CODE	MATERIAL TYPE[3] CLASS CODE	THICKNESS[4] (INCHES)	STRUCTURAL[5] COEFFICIENT
1	07	59		
2	05	26	8.0	.72
3	04	01	2.0	.88
4	03	01	2.0	.88
1	07	59		
2	05	26	12.0	1.08
3	04	28	3.0	1.02
4	04	01	2.0	.88
5	03	01	2.0	.88

STRUCTURAL DESIGN METHOD [X] 1972 AASHTO [ ] 1986 AASHTO [ ] Modified AASHTO
Other _____

AASHTO DESIGN RELIABILITY FACTORS R% N/A S_o N/A

OUTSIDE SHOULDER TYPE

[ ] Turf [X] Granular [ ] Asphalt Concrete [ ] Surface Treatment
[ ] PCC [ ] Curb and Gutter Other _____

OUTSIDE SHOULDER WIDTH (Feet) 10

SUBSURFACE EDGE DRAINS [ ] Yes [X] No

NOTES

1. Layer 1 is the natural occurring subgrade soil. The pavement surface will have the largest assigned layer number.

2. Layer description codes:
   Surface Layer..... 03 Base Layer..... 05 Subgrade..... 07
   Subsurface HMAC... 04 Subbase Layer... 06 Embankment (Fill)... 11

3. Refer to Tables 1 through 4 for material class codes.

4. If subgrade depth to a rigid layer is known, enter this depth for subgrade thickness, otherwise leave subgrade layer thickness blank.

5. Enter AASHTO structural layer coefficient value, as appropriately modified, used in pavement design or typical coefficient used by agency for this material. For the subgrade, enter either AASHTO soil support value or resilient modulus value (psi) used in design.

SHEET C. SPS-8 CANDIDATE PROJECT NOMINATION AND INFORMATION FORM

STATE MISSISSIPPI SHRP SECTION NO. 280800

TEST SECTION LAYOUT

NUMBER OF TEST SECTIONS ENTIRELY ON: FILL 2 CUT _____

SHORTEST TRANSITION BETWEEN CONSECUTIVE TEST SECTIONS (Feet) 310

VERTICAL GRADE (Avg %) (+ upgrade; - downgrade) +0.20816%

HORIZONTAL CURVATURE (Degrees) [X] Tangent _____

COMMENTS ON DEVIATIONS FROM DESIRED SITE LOCATION CRITERIA HORIZONTAL CURVES ON EACH END OF BOTH TEST SECTIONS CONNECTING THEM TO EXISTING ROADWAY.

OTHER SHRP TEST SECTIONS

FLEXIBLE - DOES AGENCY DESIGN CONFORM TO GPS-1 PROJECT CRITERIA? [ ] Yes [X] No

RIGID - DOES AGENCY DESIGN CONFORM TO GPS-3 PROJECT CRITERIA? [ ] Yes [X] No

DISTANCE TO NEAREST GPS TEST SECTION ON SAME ROUTE (Miles) 19

TEST SECTION NUMBER OF NEAREST GPS SECTION 283090

SUPPLEMENTAL TEST SECTIONS

IF SUPPLEMENTAL EXPERIMENTAL TEST SECTIONS ARE PROPOSED, COMPLETE THE FOLLOWING

TOTAL NUMBER OF SUPPLEMENTAL TEST SECTIONS 0

FACTORS TO BE INVESTIGATED _____

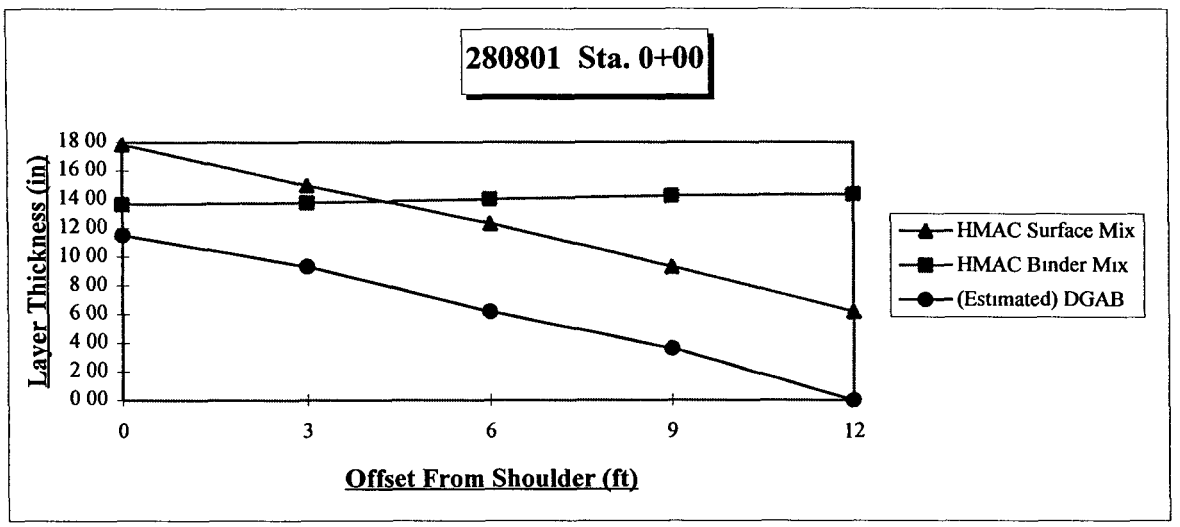
APPENDIX B

LAYER THICKNESS VS. OFFSET FROM SHOULDER - SECTIONS 280801 AND 280802

Section #1

	Offset from Shoulder (ft)					
Station 0+00	0	3	6	9	12	
Base Rod Shots	99.26	99.08	98.82	98.61	98.30	
Base Thickness (ft)	0.96	0.78	0.52	0.30	0.00	(setting min. # to zero)
Binder Rod Shots	99.44	99.45	99.47	99.49	99.50	
Binder Thickness (ft)	0.18	0.37	0.65	0.88	1.20	(Δ between rod shots)
Surface Rod Shots	99.79	99.55	99.33	99 08	98.82	
Surface Thickness (ft)	0.35	0.10	-0.14	-0.41	-0.68	(Δ between rod shots)

	Numbers to Graph in Inches				
Offset (ft)	0	3	6	9	12
(Estimated) DGAB	11.52	9.35	6.20	3.64	0.00
HMAC Binder Mix	13.65	13.77	14.01	14.25	14.37
HMAC Surface Mix	17.85	14.97	12.33	9.33	6.21



Example Calculations:

(using 0' offset data)

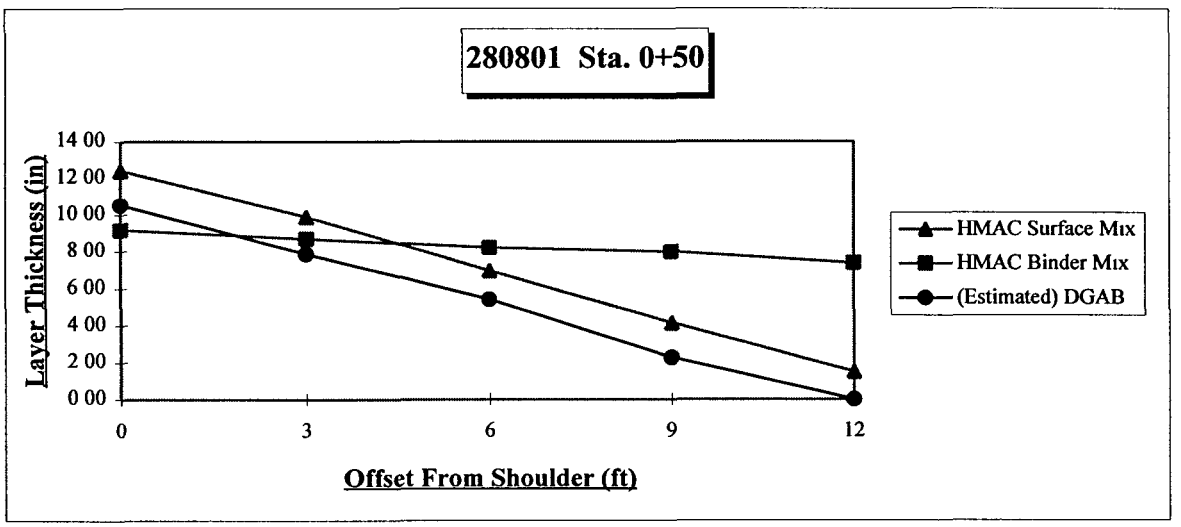
Base Thickness 99.26 - 98.30 = 0.96 ft
Binder Thickness 99.44 - 99.26 = 0.18 ft
Suface Thickness 99.79 - 99.44 = 0.35 ft

(Estimated) DGAB 0 96 ft * (12 in/ft) = 11.52 in
HMAC Binder Mix 0.18 ft * (12 in/ft) + 11.52 in = 13.65 in
HMAC Surface Mix 0.35 ft * (12 in/ft) + 13.65 in = 17.85 in

Section #1

	Offset from Shoulder (ft)					
Station 0+50	0	3	6	9	12	
Base Rod Shots	99.71	99.49	99.29	99.02	98.84	
Base Thickness (ft)	0.88	0.66	0.45	0.19	0.00	(setting min. # to zero)
Binder Rod Shots	99.60	99.56	99.52	99.50	99.45	
Binder Thickness (ft)	-0.11	0.07	0.23	0.48	0.61	(Δ between rod shots)
Surface Rod Shots	99.87	99.66	99.42	99.18	98.96	
Surface Thickness (ft)	0.27	0.10	-0.10	-0.32	-0.49	(Δ between rod shots)

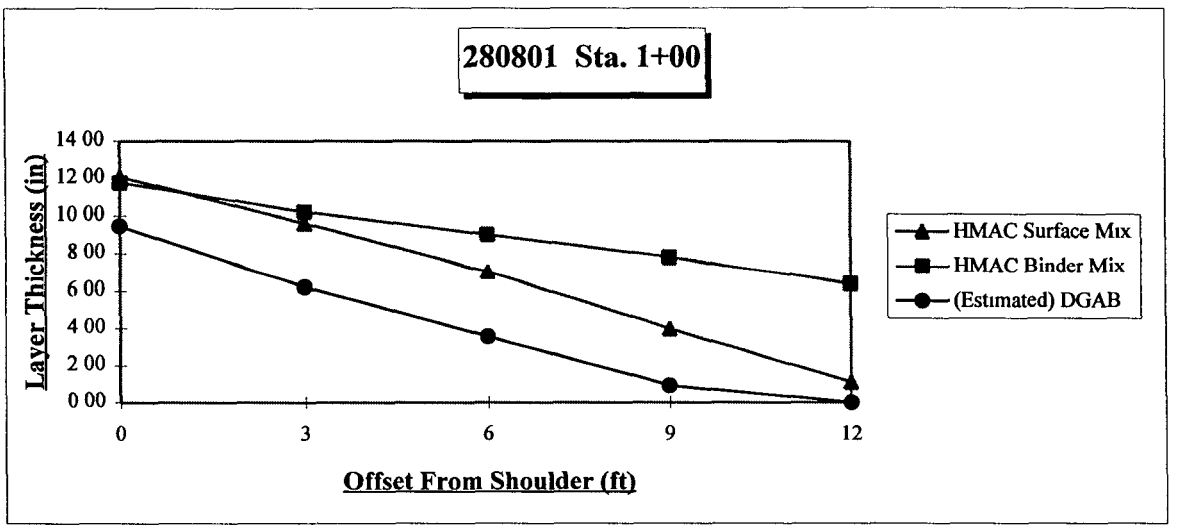
	Numbers to Graph in Inches				
Offset (ft)	0	3	6	9	12
(Estimated) DGAB	10.53	7.87	5.41	2.26	0.00
HMAC Binder Mix	9.18	8.70	8.22	7.98	7.38
HMAC Surface Mix	12.42	9.90	6.96	4.14	1.50



Section #1

	Offset from Shoulder (ft)					
Station 1+00	0	3	6	9	12	
Base Rod Shots	99.65	99.38	99.16	98.93	98.86	
Base Thickness (ft)	0.79	0.52	0.30	0.08	0.00	(setting min. # to zero)
Binder Rod Shots	99.84	99.71	99.61	99.51	99.39	
Binder Thickness (ft)	0.19	0.33	0.45	0.58	0.53	(Δ between rod shots)
Surface Rod Shots	99.87	99.66	99.45	99.19	98.95	
Surface Thickness (ft)	0.02	-0.05	-0.17	-0.32	-0.44	(Δ between rod shots)

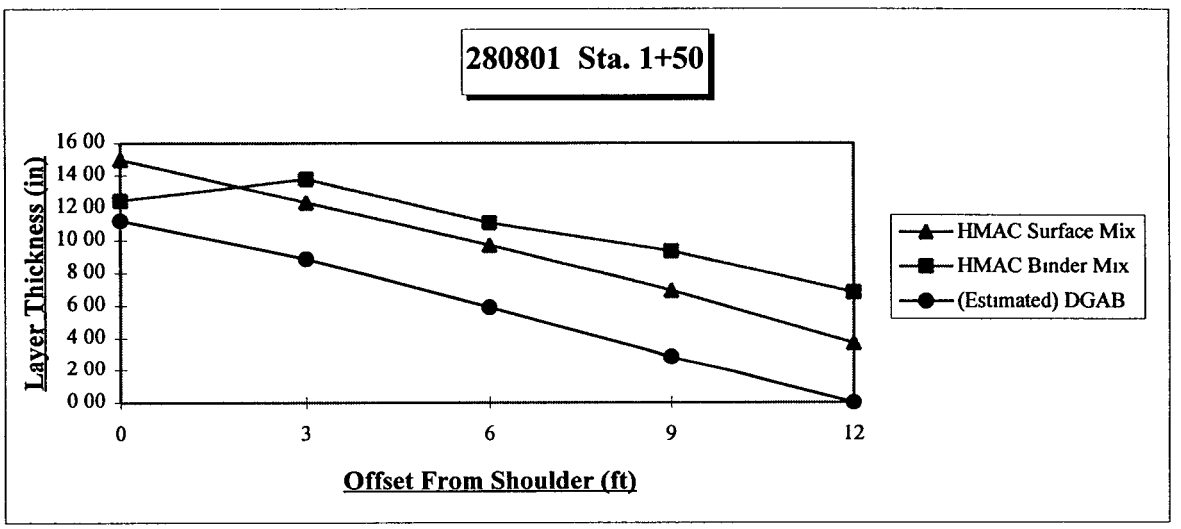
	Numbers to Graph in Inches				
Offset (ft)	0	3	6	9	12
(Estimated) DGAB	9.47	6.22	3.56	0.91	0.00
HMAC Binder Mix	11.78	10.22	9.02	7.82	6.38
HMAC Surface Mix	12.08	9.62	7.04	3.98	1.10



Section #1

	Offset from Shoulder (ft)					
Station 1+50	0	3	6	9	12	
Base Rod Shots	99.65	99.45	99.20	98.95	98.71	
Base Thickness (ft)	0.94	0.74	0.49	0.24	0.00	(setting min. # to zero)
Binder Rod Shots	99.75	99.86	99.64	99.49	99.28	
Binder Thickness (ft)	0.10	0.41	0.43	0.54	0.57	(Δ between rod shots)
Surface Rod Shots	99.96	99.74	99.52	99.29	99.02	
Surface Thickness (ft)	0.21	-0.12	-0.12	-0.20	-0.26	(Δ between rod shots)

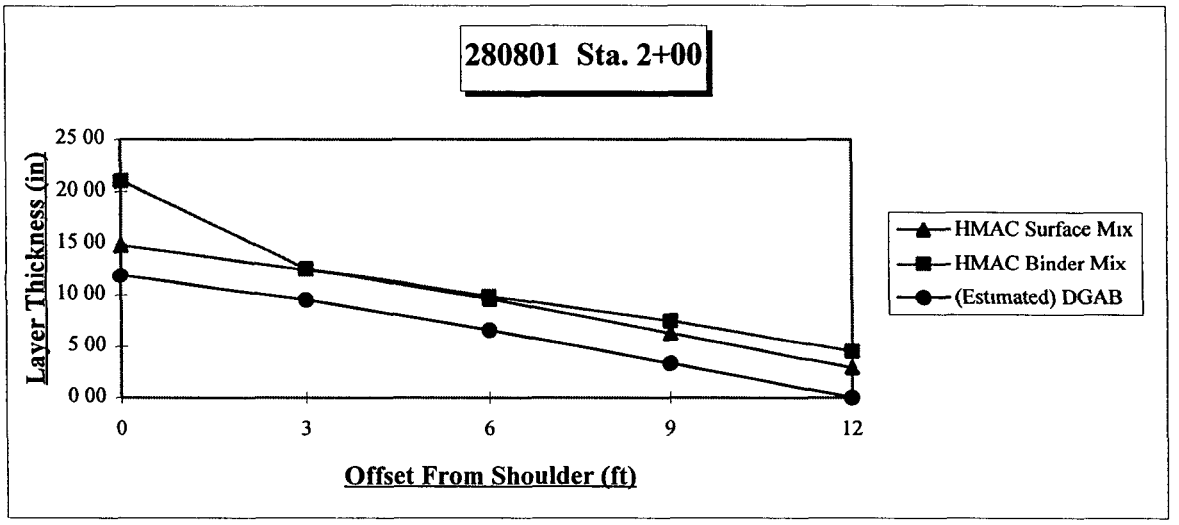
	Numbers to Graph in Inches				
Offset (ft)	0	3	6	9	12
(Estimated) DGAB	11.22	8.86	5.91	2.85	0.00
HMAC Binder Mix	12.45	13.77	11.07	9.33	6.81
HMAC Surface Mix	14.97	12.33	9.69	6.93	3.69



Section #1

Station 2+00	*Offset from Shoulder (ft)* 0	3	6	9	12	
Base Rod Shots	99.91	99.71	99.47	99.20	98.92	
Base Thickness (ft)	0.99	0.80	0.55	0.28	0.00	(setting min. # to zero)
Binder Rod Shots	100.67	99.97	99.74	99.54	99.30	
Binder Thickness (ft)	0.76	0.26	0.27	0.34	0.38	(Δ between rod shots)
Surface Rod Shots	100.16	99.96	99.72	99.44	99.16	
Surface Thickness (ft)	-0.52	-0.01	-0.02	-0.10	-0.14	(Δ between rod shots)

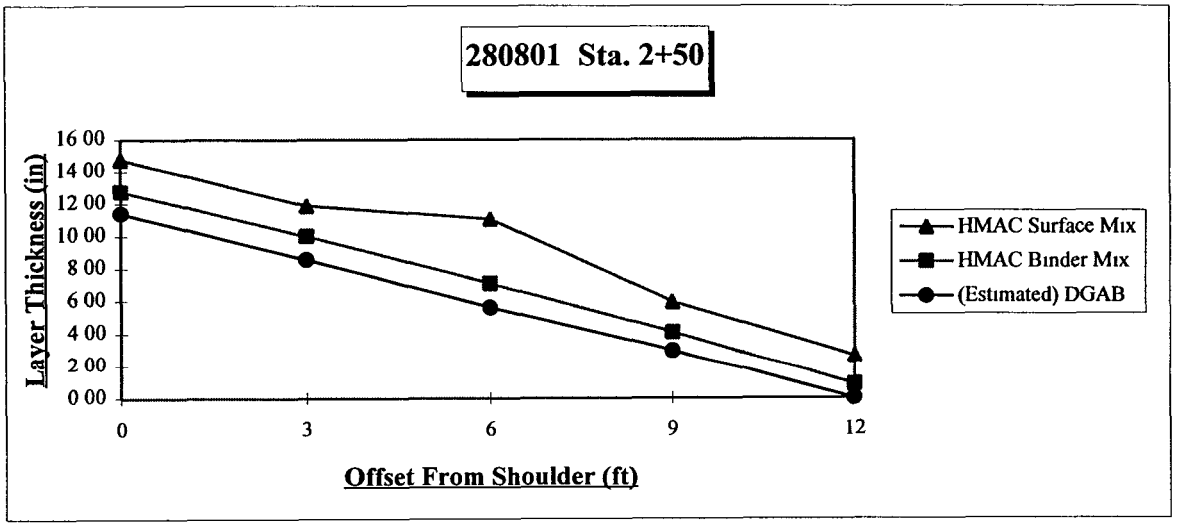
Offset (ft)	*Numbers to Graph in Inches* 0	3	6	9	12
(Estimated) DGAB	11.91	9.55	6.59	3.35	0.00
HMAC Binder Mix	21.03	12.63	9.87	7.47	4.53
HMAC Surface Mix	14.85	12.51	9.63	6.27	2.91



Section #1

	Offset from Shoulder (ft)					
Station 2+50	0	3	6	9	12	
Base Rod Shots	100.02	99.78	99.53	99.31	99.06	
Base Thickness (ft)	0.95	0.71	0.47	0.25	0.00	(setting min. # to zero)
Binder Rod Shots	100.13	99.90	99.66	99.41	99.14	
Binder Thickness (ft)	0.11	0.12	0.12	0.09	0.07	(Δ between rod shots)
Surface Rod Shots	100.30	100.06	99.99	99.56	99.29	
Surface Thickness (ft)	0.17	0.16	0.33	0.16	0.15	(Δ between rod shots)

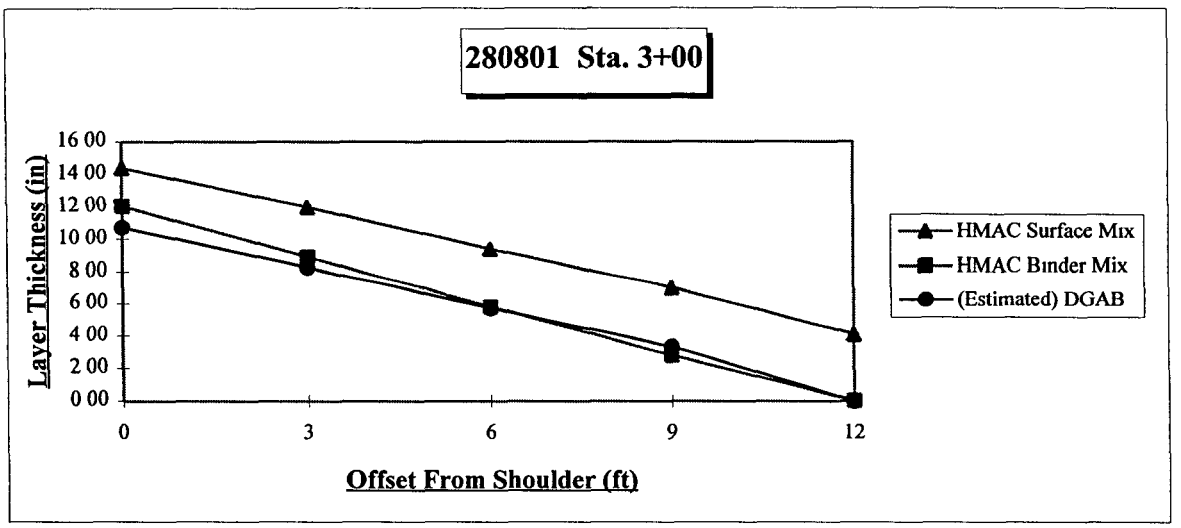
	Numbers to Graph in Inches				
Offset (ft)	0	3	6	9	12
(Estimated) DGAB	11.42	8.56	5.61	2.95	0.00
HMAC Binder Mix	12.78	10.02	7.08	4.08	0.84
HMAC Surface Mix	14.76	11.88	11.06	5.94	2.64



Section #1

	Offset from Shoulder (ft)					
Station 3+00	0	3	6	9	12	
Base Rod Shots	99.95	99.75	99.53	99.34	99.06	
Base Thickness (ft)	0.89	0.69	0.48	0.28	0.00	(setting min. # to zero)
Binder Rod Shots	100.06	99.80	99.54	99.29	99.06	
Binder Thickness (ft)	0.11	0.05	0.01	-0.05	0.00	(Δ between rod shots)
Surface Rod Shots	100.26	100.06	99.84	99.64	99.40	
Surface Thickness (ft)	0.19	0.26	0.30	0.35	0.34	(Δ between rod shots)

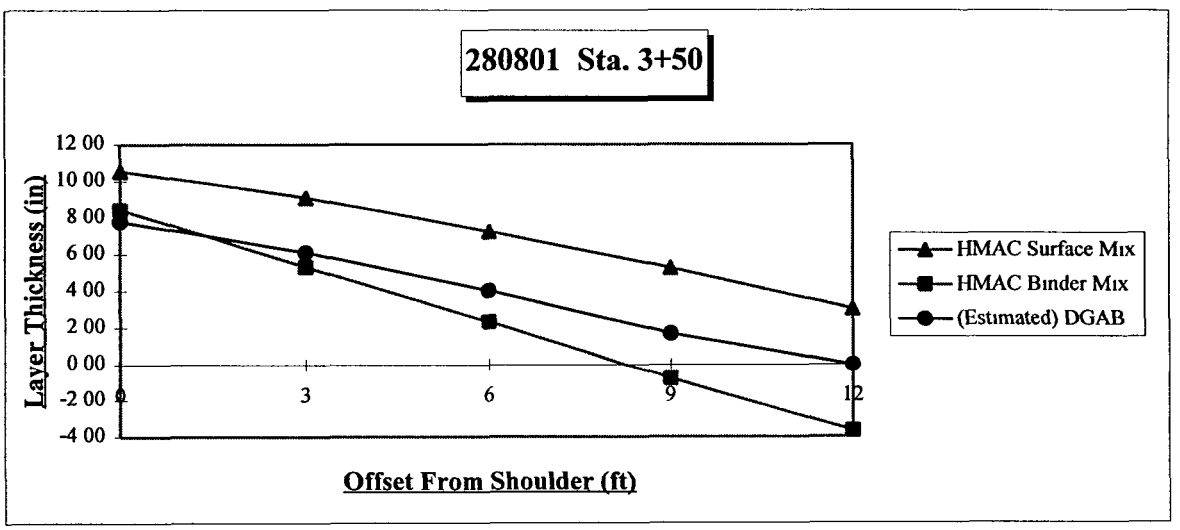
	Numbers to Graph in Inches				
Offset (ft)	0	3	6	9	12
(Estimated) DGAB	10.73	8.27	5.71	3.35	0.00
HMAC Binder Mix	12.04	8.92	5.80	2.80	0.04
HMAC Surface Mix	14.38	11.98	9.40	7.00	4.12



Section #1

	Offset from Shoulder (ft)					
Station 3+50	0	3	6	9	12	
Base Rod Shots	99.84	99.70	99.53	99.34	99.20	
Base Thickness (ft)	0.65	0.51	0.34	0.14	0.00	(setting min. # to zero)
Binder Rod Shots	99.90	99.64	99.39	99.13	98.89	
Binder Thickness (ft)	0.06	-0.06	-0.14	-0.21	-0.31	(Δ between rod shots)
Surface Rod Shots	100.08	99.96	99.80	99.64	99.45	
Surface Thickness (ft)	0.17	0.31	0.41	0.51	0.56	(Δ between rod shots)

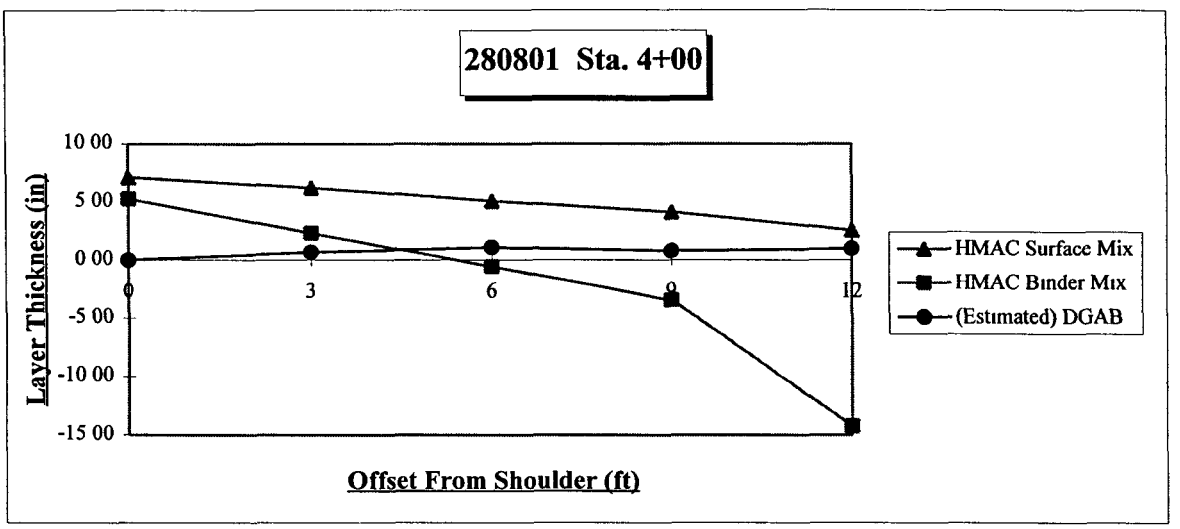
	Numbers to Graph in Inches				
Offset (ft)	0	3	6	9	12
(Estimated) DGAB	7.78	6.10	4.04	1.67	0.00
HMAC Binder Mix	8.45	5.33	2.33	-0.79	-3.67
HMAC Surface Mix	10.55	9.11	7.25	5.27	3.05



Section #1

	Offset from Shoulder (ft)					
Station 4+00	0	3	6	9	12	
Base Rod Shots	99.38	99.43	99.47	99.44	99.46	
Base Thickness (ft)	0.00	0.06	0.09	0.07	0.08	(setting min. # to zero)
Binder Rod Shots	99.82	99.57	99.33	99.09	98.19	
Binder Thickness (ft)	0.44	0.14	-0.14	-0.35	-1.27	(Δ between rod shots)
Surface Rod Shots	99.97	99.90	99.80	99.72	99.59	
Surface Thickness (ft)	0.16	0.33	0.47	0.63	1.40	(Δ between rod shots)

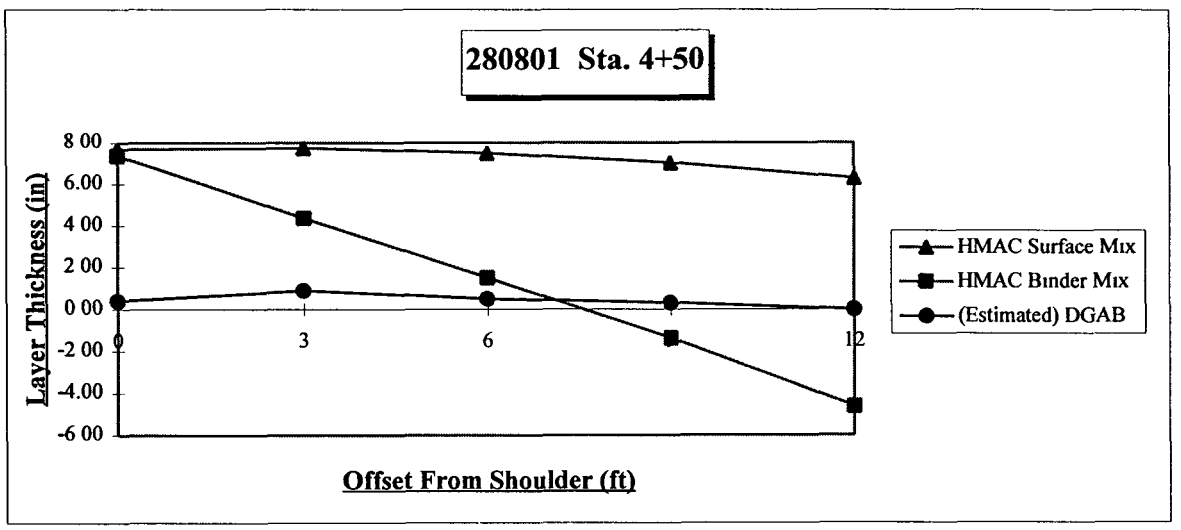
	Numbers to Graph in Inches				
Offset (ft)	0	3	6	9	12
(Estimated) DGAB	0.00	0.69	1.08	0.79	0.98
HMAC Binder Mix	5.26	2.32	-0.56	-3.44	-14.24
HMAC Surface Mix	7.12	6.22	5.08	4.12	2.56



Section #1

	Offset from Shoulder (ft)					
Station 4+50	0	3	6	9	12	
Base Rod Shots	99.19	99.23	99.20	99.18	99.16	
Base Thickness (ft)	0.03	0.07	0.04	0.02	0.00	(setting min. # to zero)
Binder Rod Shots	99.77	99.52	99.28	99.04	98.77	
Binder Thickness (ft)	0.58	0.29	0.08	-0.14	-0.39	(Δ between rod shots)
Surface Rod Shots	99.80	99.80	99.78	99.74	99.68	
Surface Thickness (ft)	0.03	0.28	0.50	0.70	0.91	(Δ between rod shots)

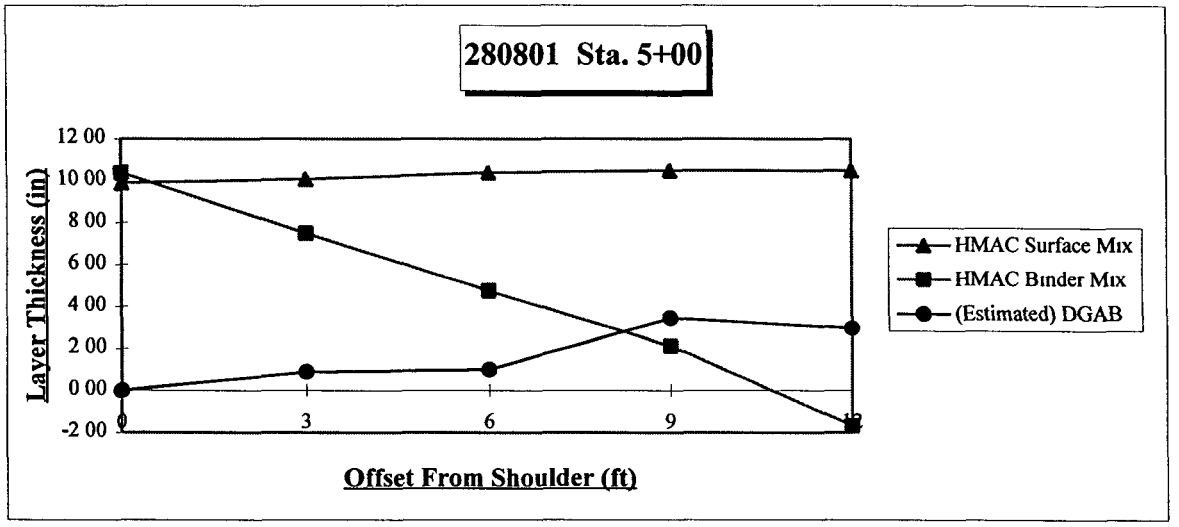
	Numbers to Graph in Inches				
Offset (ft)	0	3	6	9	12
(Estimated) DGAB	0.39	0.89	0.49	0.30	0.00
HMAC Binder Mix	7.38	4.38	1.50	-1.38	-4.62
HMAC Surface Mix	7.68	7.74	7.50	7.02	6.30



Section #1

	Offset from Shoulder (ft)					
Station 5+00	0	3	6	9	12	
Base Rod Shots	98.84	98.91	98.92	99.12	99.08	
Base Thickness (ft)	0.00	0.07	0.08	0.29	0.25	(setting min. # to zero)
Binder Rod Shots	99.70	99.46	99.23	99.01	98.70	
Binder Thickness (ft)	0.86	0.55	0.31	-0.11	-0.39	(Δ between rod shots)
Surface Rod Shots	99.66	99.68	99.70	99.71	99.71	
Surface Thickness (ft)	-0.04	0.22	0.47	0.70	1.02	(Δ between rod shots)

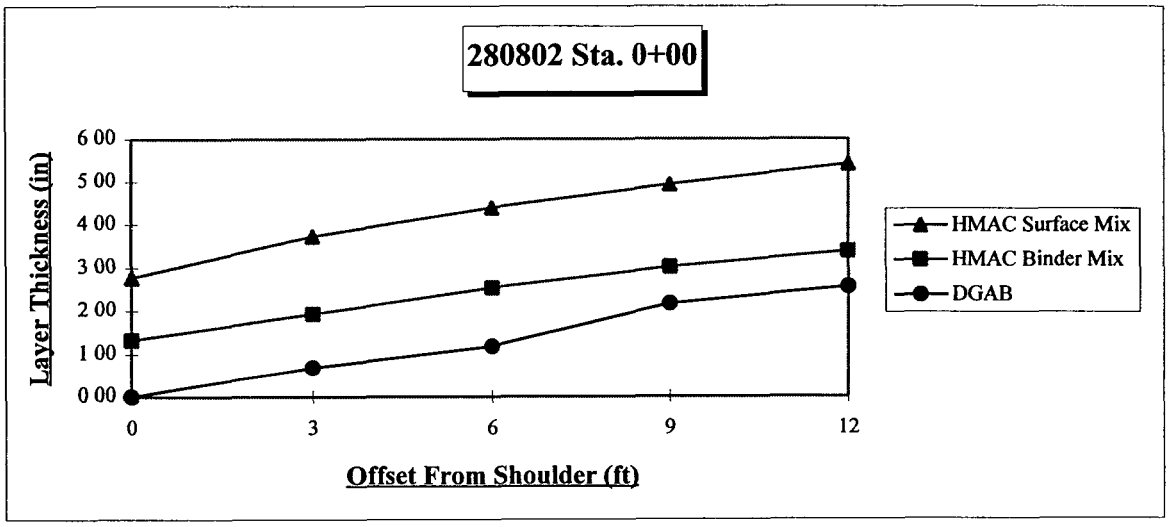
	Numbers to Graph in Inches				
Offset (ft)	0	3	6	9	12
(Estimated) DGAB	0.00	0.89	0.98	3.44	2.95
HMAC Binder Mix	10.38	7.50	4.74	2.10	-1.68
HMAC Surface Mix	9.90	10.08	10.38	10.50	10.50



Section #2

	Offset from Shoulder (ft)					
Station 0+00	0	3	6	9	12	
Base Rod Shots	100.69	100.75	100.79	100.87	100.90	
Base Thickness (ft)	0.00	0.06	0.10	0.18	0.21	(setting min. # to zero)
Binder Rod Shots	100.80	100.85	100.90	100.94	100.97	
Binder Thickness (ft)	0.11	0.10	0.11	0.07	0.07	(Δ between rod shots)
Surface Rod Shots	100.92	101.00	101.06	101.10	101.14	
Surface Thickness (ft)	0.12	0.15	0.16	0.16	0.17	(Δ between rod shots)

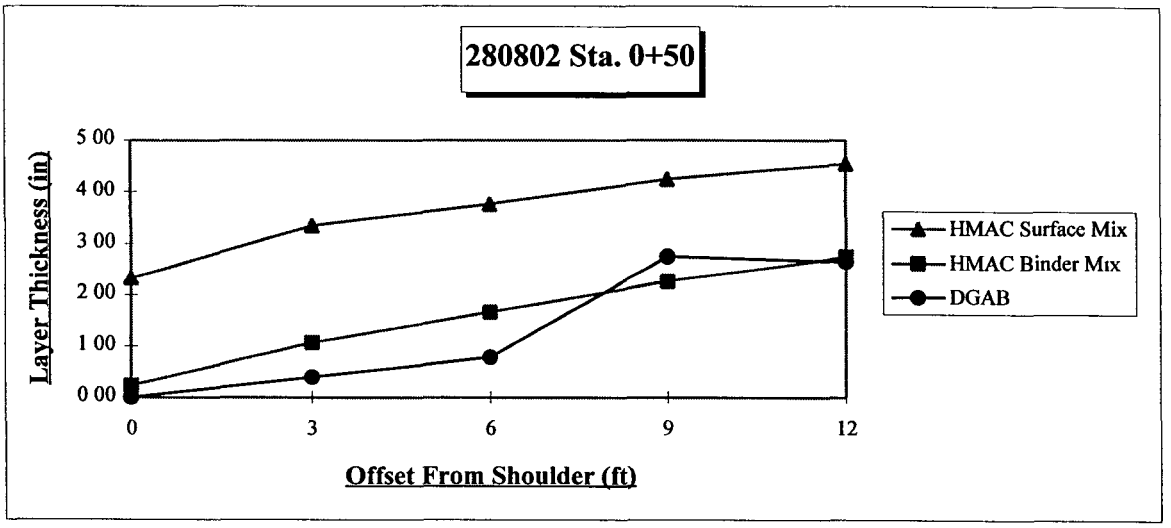
	Numbers to Graph in Inches				
Offset (ft)	0	3	6	9	12
DGAB	0.00	0.69	1.18	2.17	2.56
HMAC Binder Mix	1.33	1.93	2.53	3.01	3.37
HMAC Surface Mix	2.77	3.73	4.39	4.93	5.41



Section #2

	Offset from Shoulder (ft)					
Station 0+50	0	3	6	9	12	
Base Rod Shots	101.82	101.85	101.89	102.05	102.04	
Base Thickness (ft)	0.00	0.03	0.07	0.23	0.22	(setting min. # to zero)
Binder Rod Shots	101.84	101.91	101.96	102.01	102.05	
Binder Thickness (ft)	0.02	0.06	0.07	-0.04	0.01	(Δ between rod shots)
Surface Rod Shots	102.02	102.10	102.14	102.18	102.20	
Surface Thickness (ft)	0.17	0.19	0.18	0.16	0.15	(Δ between rod shots)

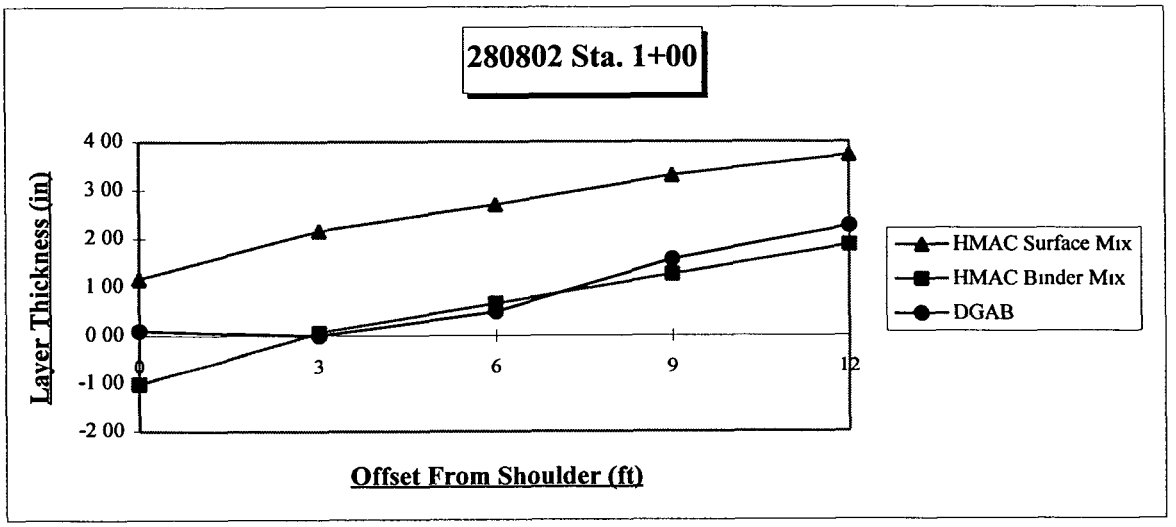
	Numbers to Graph in Inches				
Offset (ft)	0	3	6	9	12
DGAB	0.00	0.39	0.79	2.76	2.66
HMAC Binder Mix	0.23	1.07	1.67	2.27	2.75
HMAC Surface Mix	2.33	3.35	3.77	4.25	4.55



Section #2

	Offset from Shoulder (ft)					
Station 1+00	0	3	6	9	12	
Base Rod Shots	102.95	102.94	102.99	103.08	103.13	
Base Thickness (ft)	0.01	0.00	0.04	0.13	0.19	(setting min. # to zero)
Binder Rod Shots	102.86	102.95	103.00	103.05	103.10	
Binder Thickness (ft)	-0.09	0.01	0.01	-0.03	-0.03	(Δ between rod shots)
Surface Rod Shots	103.04	103.13	103.17	103.22	103.26	
Surface Thickness (ft)	0.18	0.17	0.17	0.17	0.16	(Δ between rod shots)

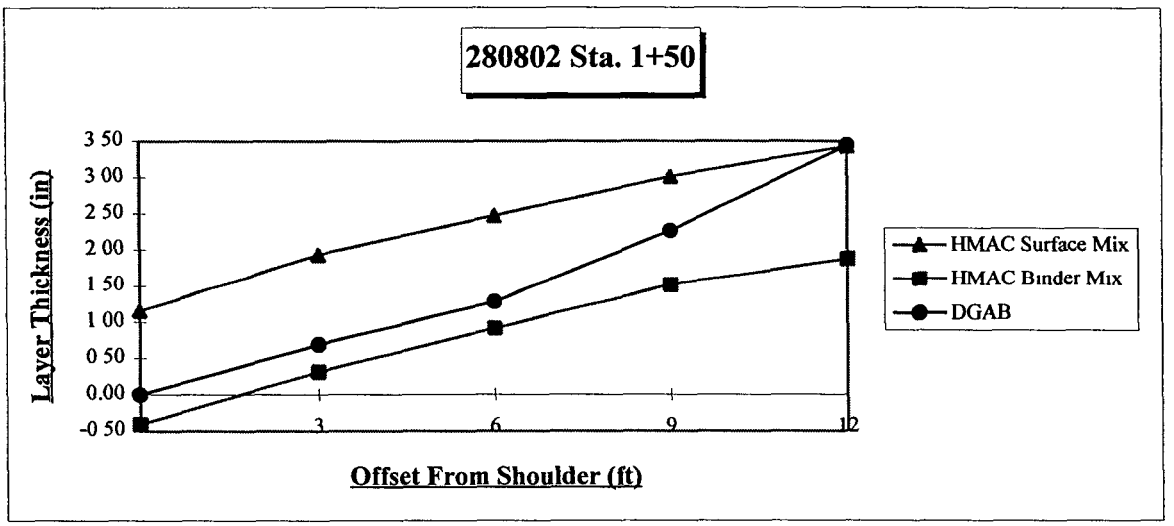
	Numbers to Graph in Inches				
Offset (ft)	0	3	6	9	12
DGAB	0.10	0.00	0.49	1.57	2.26
HMAC Binder Mix	-1.01	0.07	0.67	1.27	1.87
HMAC Surface Mix	1.17	2.17	2.71	3.31	3.73



Section #2

	Offset from Shoulder (ft)					
Station 1+50	0	3	6	9	12	
Base Rod Shots	104.13	104.19	104.24	104.32	104.42	
Base Thickness (ft)	0.00	0.06	0.11	0.19	0.29	(setting min. # to zero)
Binder Rod Shots	104.10	104.16	104.21	104.26	104.29	
Binder Thickness (ft)	-0.03	-0.03	-0.03	-0.06	-0.13	(Δ between rod shots)
Surface Rod Shots	104.23	104.30	104.34	104.39	104.42	
Surface Thickness (ft)	0.13	0.14	0.13	0.13	0.13	(Δ between rod shots)

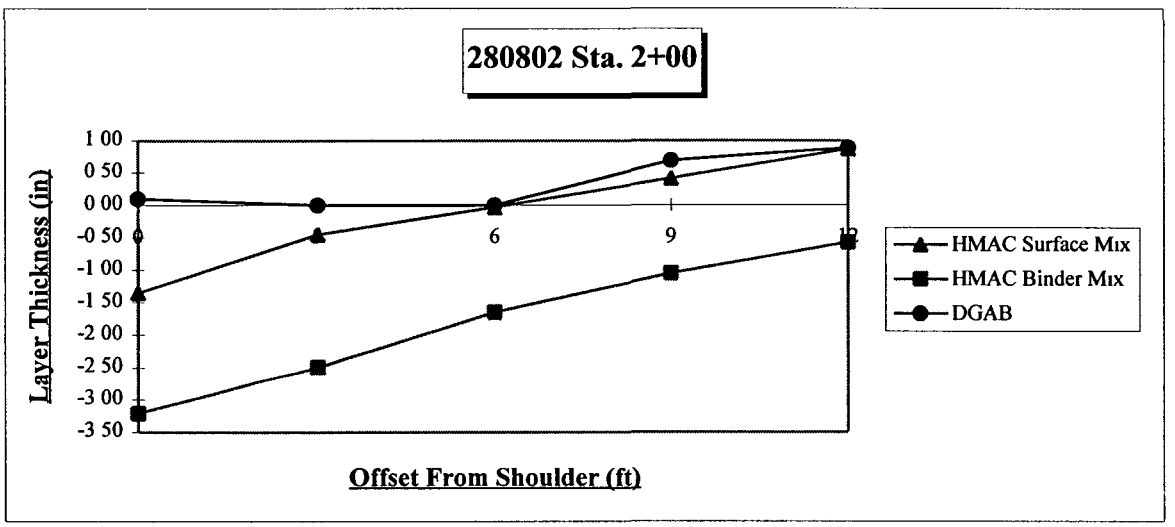
	Numbers to Graph in Inches				
Offset (ft)	0	3	6	9	12
DGAB	0.00	0.69	1.28	2.26	3.44
HMAC Binder Mix	-0.41	0.31	0.91	1.51	1.87
HMAC Surface Mix	1.15	1.93	2.47	3.01	3.43



Section #2

	Offset from Shoulder (ft)					
Station 2+00	0	3	6	9	12	
Base Rod Shots	105.68	105.67	105.67	105.73	105.74	
Base Thickness (ft)	0.01	0.00	0.00	0.06	0.07	(setting min. # to zero)
Binder Rod Shots	105.40	105.46	105.53	105.58	105.62	
Binder Thickness (ft)	-0.28	-0.21	-0.14	-0.15	-0.12	(Δ between rod shots)
Surface Rod Shots	105.56	105.63	105.67	105.70	105.74	
Surface Thickness (ft)	0.16	0.17	0.14	0.12	0.12	(Δ between rod shots)

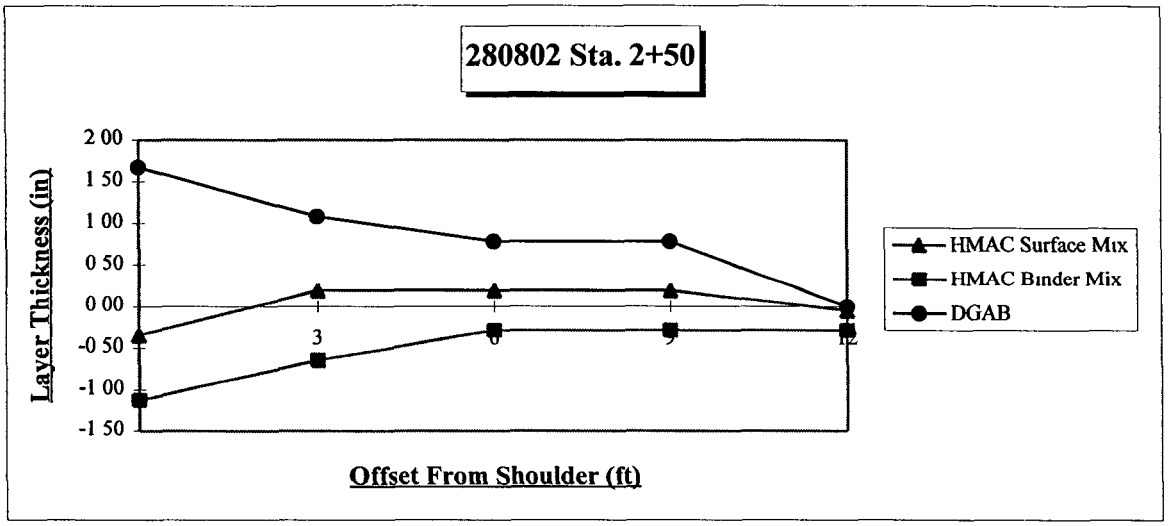
	Numbers to Graph in Inches				
Offset (ft)	0	3	6	9	12
DGAB	0.10	0.00	0.00	0.69	0.89
HMAC Binder Mix	-3.21	-2.49	-1.65	-1.05	-0.57
HMAC Surface Mix	-1.35	-0.45	-0.03	0.41	0.87



Section #2

	Offset from Shoulder (ft)					
Station 2+50	0	3	6	9	12	
Base Rod Shots	107.19	107.14	107.12	107.12	107.05	
Base Thickness (ft)	0.14	0.09	0.07	0.07	0.00	(setting min. # to zero)
Binder Rod Shots	106.96	107.00	107.03	107.03	107.03	
Binder Thickness (ft)	-0.23	-0.14	-0.09	-0.09	-0.02	(Δ between rod shots)
Surface Rod Shots	107.03	107.07	107.07	107.07	107.05	
Surface Thickness (ft)	0.07	0.07	0.04	0.04	0.02	(Δ between rod shots)

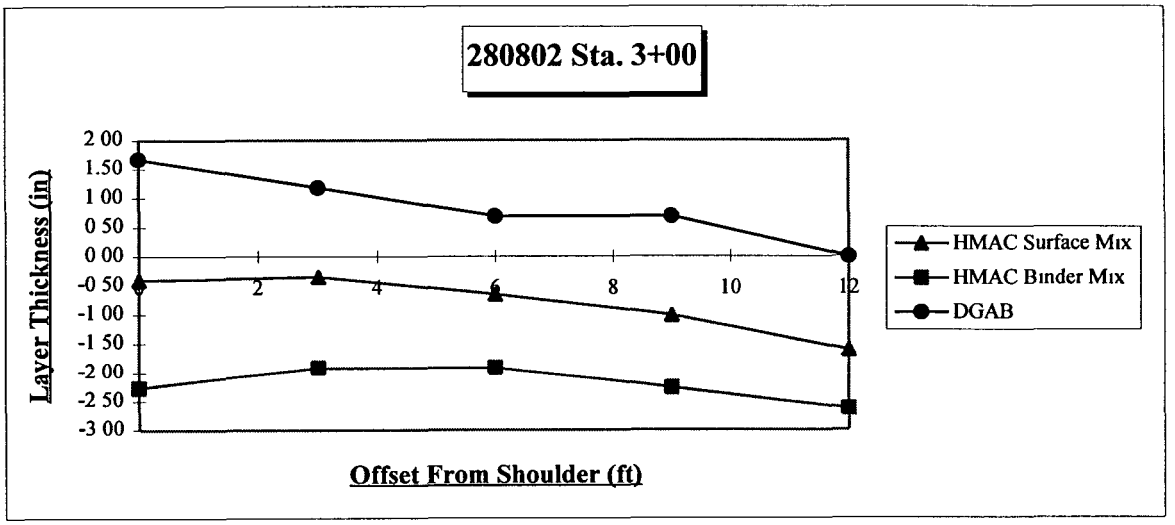
	Numbers to Graph in Inches				
Offset (ft)	0	3	6	9	12
DGAB	1.67	1.08	0.79	0.79	0.00
HMAC Binder Mix	-1.13	-0.65	-0.29	-0.29	-0.29
HMAC Surface Mix	-0.35	0.19	0.19	0.19	-0.05



Section #2

	Offset from Shoulder (ft)					
Station 3+00	0	3	6	9	12	
Base Rod Shots	108.95	108.91	108.87	108.87	108.81	
Base Thickness (ft)	0.14	0.10	0.06	0.06	0.00	(setting min. # to zero)
Binder Rod Shots	108.62	108.65	108.65	108.62	108.59	
Binder Thickness (ft)	-0.33	-0.26	-0.22	-0.25	-0.22	(Δ between rod shots)
Surface Rod Shots	108.78	108.78	108.76	108.73	108.68	
Surface Thickness (ft)	0.16	0.13	0.10	0.10	0.08	(Δ between rod shots)

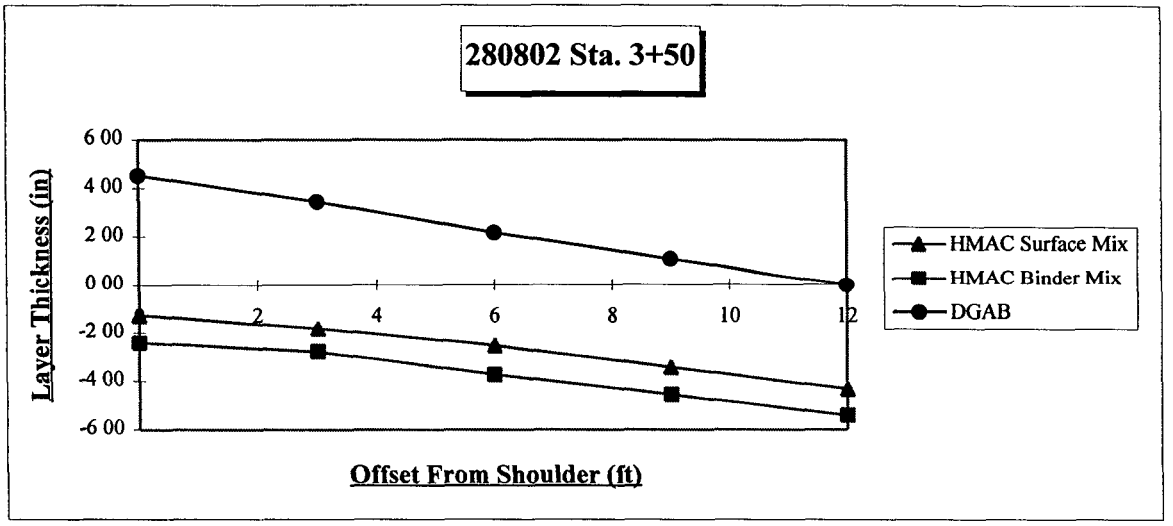
	Numbers to Graph in Inches				
Offset (ft)	0	3	6	9	12
DGAB	1.67	1.18	0.69	0.69	0.00
HMAC Binder Mix	-2.27	-1.91	-1.91	-2.27	-2.63
HMAC Surface Mix	-0.41	-0.35	-0.65	-1.01	-1.61



Section #2

	Offset from Shoulder (ft)					
Station 3+50	0	3	6	9	12	
Base Rod Shots	111.05	110.96	110.85	110.76	110.67	
Base Thickness (ft)	0.38	0.29	0.18	0.09	0.00	(setting min. # to zero)
Binder Rod Shots	110.47	110.44	110.36	110.29	110.22	
Binder Thickness (ft)	-0.58	-0.52	-0.49	-0.47	-0.45	(Δ between rod shots)
Surface Rod Shots	110.57	110.52	110.46	110.39	110.31	
Surface Thickness (ft)	0.09	0.08	0.10	0.09	0.09	(Δ between rod shots)

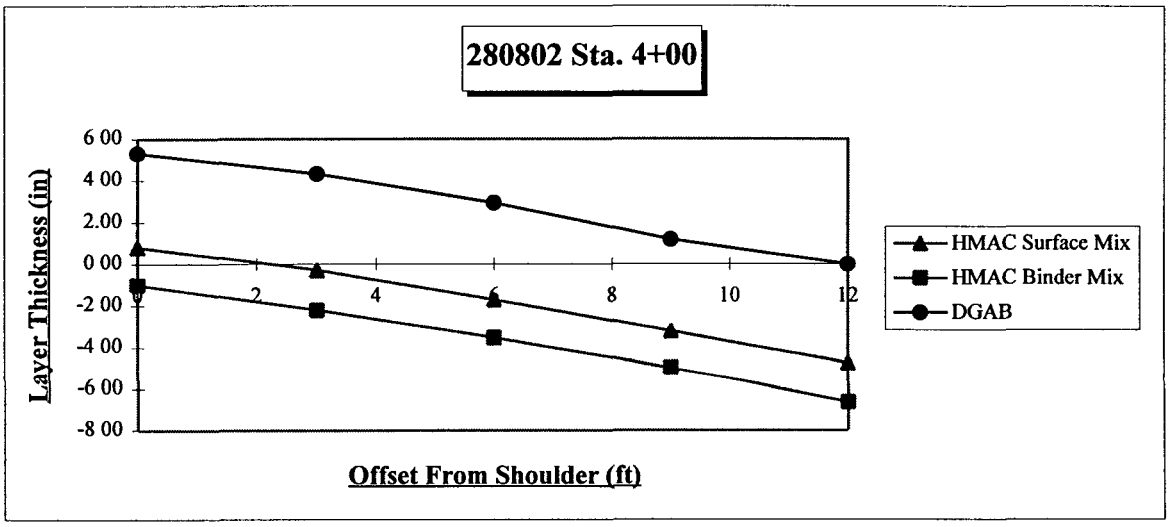
	Numbers to Graph in Inches				
Offset (ft)	0	3	6	9	12
DGAB	4.53	3.44	2.17	1.08	0.00
HMAC Binder Mix	-2.41	-2.77	-3.73	-4.57	-5.41
HMAC Surface Mix	-1.27	-1.81	-2.53	-3.43	-4.33



Section #2

	Offset from Shoulder (ft)					
Station 4+00	0	3	6	9	12	
Base Rod Shots	112.98	112.89	112.78	112.63	112.53	
Base Thickness (ft)	0.44	0.36	0.25	0.10	0.00	(setting min. # to zero)
Binder Rod Shots	112.45	112.35	112.24	112.12	111.98	
Binder Thickness (ft)	-0.53	-0.54	-0.54	-0.51	-0.55	(Δ between rod shots)
Surface Rod Shots	112.60	112.51	112.39	112.27	112.14	
Surface Thickness (ft)	0.15	0.16	0.15	0.14	0.16	(Δ between rod shots)

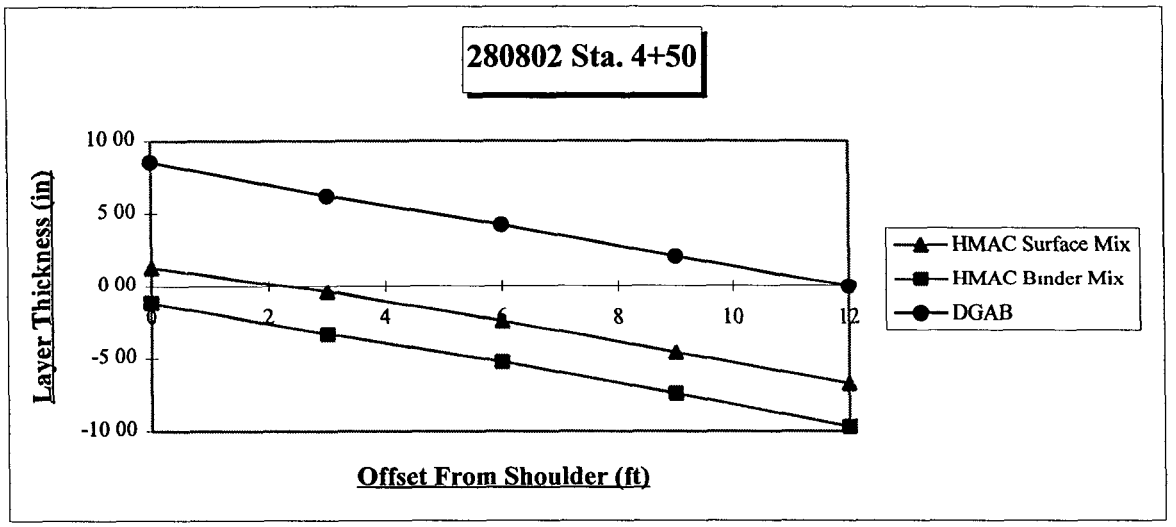
	Numbers to Graph in Inches				
Offset (ft)	0	3	6	9	12
DGAB	5.31	4.33	2.95	1.18	0.00
HMAC Binder Mix	-0.99	-2.19	-3.51	-4.95	-6.63
HMAC Surface Mix	0.81	-0.27	-1.71	-3.21	-4.71



Section #2

	Offset from Shoulder (ft)					
Station 4+50	0	3	6	9	12	
Base Rod Shots	115.28	115.08	114.92	114.74	114.57	
Base Thickness (ft)	0.71	0.52	0.35	0.17	0.00	(setting min. # to zero)
Binder Rod Shots	114.47	114.29	114.13	113.95	113.76	
Binder Thickness (ft)	-0.81	-0.79	-0.79	-0.79	-0.81	(Δ between rod shots)
Surface Rod Shots	114.68	114.54	114.37	114.19	114.01	
Surface Thickness (ft)	0.20	0.24	0.23	0.23	0.24	(Δ between rod shots)

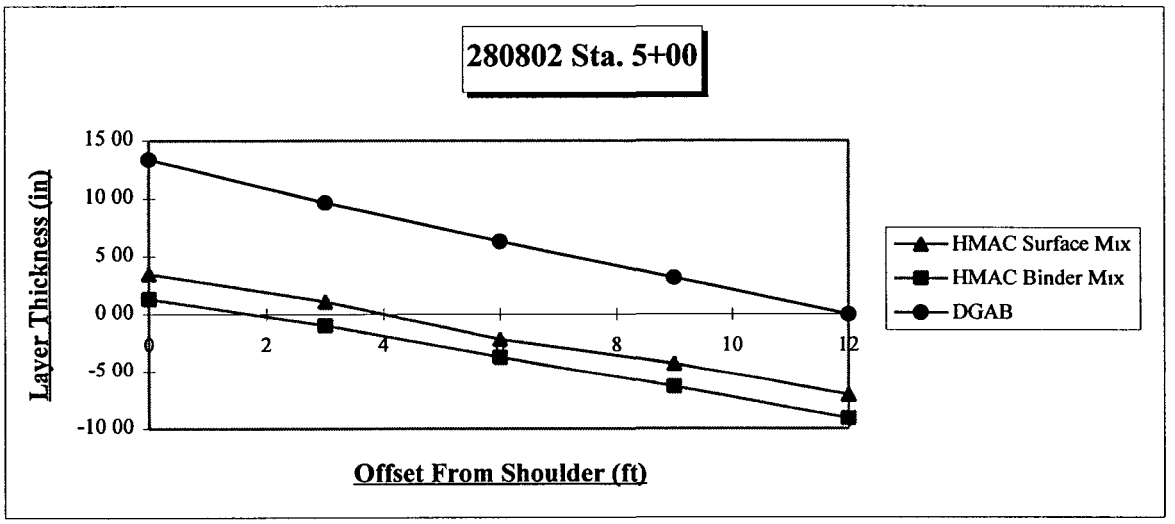
	Numbers to Graph in Inches				
Offset (ft)	0	3	6	9	12
DGAB	8.56	6.20	4.23	2.07	0.00
HMAC Binder Mix	-1.16	-3.32	-5.24	-7.40	-9.68
HMAC Surface Mix	1.30	-0.38	-2.42	-4.58	-6.74



Section #2

	Offset from Shoulder (ft)					
Station 5+00	0	3	6	9	12	
Base Rod Shots	117.72	117.41	117.13	116.87	116.61	
Base Thickness (ft)	1.12	0.80	0.52	0.26	0.00	(setting min. # to zero)
Binder Rod Shots	116.72	116.53	116.30	116.08	115.85	
Binder Thickness (ft)	-1.00	-0.88	-0.83	-0.79	-0.76	(Δ between rod shots)
Surface Rod Shots	116.90	116.70	116.43	116.25	116.02	
Surface Thickness (ft)	0.18	0.17	0.13	0.17	0.17	(Δ between rod shots)

	Numbers to Graph in Inches				
Offset (ft)	0	3	6	9	12
DGAB	13.39	9.65	6.30	3.15	0.00
HMAC Binder Mix	1.33	-0.95	-3.71	-6.35	-9.11
HMAC Surface Mix	3.49	1.09	-2.15	-4.31	-7.07



APPENDIX C

MATERIALS SAMPLING AND TESTING PLAN

Brent Rauhut Engineering Inc.

23 April 1996

Mr. Alfred B. Crawley
Research & Development Engineer
Mississippi Department of Transportation
P.O. Box 1850
Jackson, Mississippi 39215-1850

Subject: Mississippi SPS-8 Project (280800) Materials Sampling and Field Testing Plan

Dear Al,

Enclosed is the plan for the materials sampling and testing activities for the Mississippi SPS-8 project, located in the northbound lanes of SR-315 near Sardis, Mississippi. This plan has been prepared to identify details of the materials sampling, field testing and laboratory materials testing to occur as part of the SPS-8 project construction.

If you have any questions or comments regarding the information provided in this plan, please do not hesitate to contact me. A copy of this document is also being provided to Mr. Monte Symons of the FHWA for review and approval.

Sincerely,

Mark P. Gardner, P.E.
Project Engineer, SRCO

MPG:dmj

Enclosure: As stated.

c.w/Enc: Monte Symons, FHWA/LTPP-PPD
Gonzalo Rada, PCS/LAW
John Avent, MSDOT

c.w/o Enc: Morris Reinhardt, RE/SRCO

MATERIAL SAMPLING
AND
TESTING PLAN

MISSISSIPPI SPS-8 PROJECT 280800
SR-315 NBL, PANOLA COUNTY, MISSISSIPPI

PREPARED BY:

BRENT RAUHUT ENGINEERING INC.
FHWA/LTPP SOUTHERN REGION COORDINATION OFFICE
8240 MOPAC, SUITE 220
AUSTIN, TEXAS 78759

APRIL 1996

MATERIAL SAMPLING AND TESTING PLAN
MISSISSIPPI SPS-8 PROJECT (280800)
SR-315 NBL, PANOLA COUNTY, MISSISSIPPI

INTRODUCTION

As part of their participation in the FHWA/LTPP studies, the State of Mississippi has elected to construct an SPS-8 project to study the environmental effects in the absence of heavy loads. This project will consist of two test sections with similar details and materials on SR-315, in the northbound lane, in Panola County, Mississippi. It is the intent of this document to provide a complete plan for the material sampling, testing, and laboratory material testing that will occur as a part of this project.

This document has been prepared in accordance with guidelines provided by the Federal Highway Administration entitled "Specific Pavement Studies Material Sampling and Testing Requirements for Experiment SPS-8, Study of Environmental Effects in the Absence of Heavy Loads, August 1992". Recognizing the apparent variability in the construction of roadway projects, the goal of this effort is to develop a sampling and testing plan for the project materials that will be consistent with other projects in this experiment, and therefore make the information obtained suitable for analysis.

The objective of the SPS-8 study is to investigate the performance of selected flexible and rigid pavement structures constructed on different subgrade types in different environmental regions. For flexible pavements, the factors addressed in this study include different surface and base thicknesses. Mississippi's involvement in the study will provide critical information in the wet-no freeze environmental zone, on a coarse subgrade soil. The data produced by this experiment will be used to evaluate existing design methods and performance equations. The interaction of the factors previously discussed will be determined in combination with the effect of environmental region and soil type. The effects of these factors will be studied under realistic performance conditions with significant materials and construction control. Herein lies the need for a sampling and testing plan, provided in the following pages.

This sampling and testing plan has been developed by Brent Rauhut Engineering, Inc. the Southern Region Coordination Office under contract to the Federal Highway Administration. If, during the construction activities, any questions arise regarding the sampling and/or testing to be conducted, one should first coordinate these questions with the Mississippi Department of Transportation, who may refer them to the Southern Region Coordination Office.

This document has been prepared in three distinct parts, each covering a particular area of this rather formidable exercise. The three sections are:

A. General Layout Information

B. Materials Sampling and Testing

C. Laboratory Material Testing

The General Layout section provides tables and figures of the layout showing the two test sections along the roadway and the layer structure of both test sections.

The Material Sampling and Testing section defines in detail all of the material samples to be obtained, testing to be performed in the field, and provides an itemized list showing where each sample is to be shipped for laboratory testing.

Finally, the Laboratory Material Testing section outlines the laboratory material test program to be conducted and provides tracking charts showing the testing to be performed on each sample of each material in each laboratory.

SECTION A

GENERAL LAYOUT INFORMATION

SECTION A

GENERAL LAYOUT INFORMATION

This section of the plan provides a description of the SPS-8 project in terms of the location of the test sections along the roadway. Table A-1 lists the test sections in order of increasing station, providing an indication of the cross-section of each test section. Table A-2 tracks the test sections from the beginning of the first section at Station 78+00 to the end of the last section at Station 96+00. This table indicates transition areas between sections and the variation of pavement layer materials within these transitions. Figure A-1 depicts the layout of the test sections along the roadway and shows the variation of material type and layer thickness.

The referenced project stationing was provided by the Mississippi DOT in the form of preliminary project plans. If there are significant changes in alignment or stationing, this plan should be reviewed closely to determine if revisions are warranted.

TABLE A-1. TEST SECTION LAYOUT

Section (Cell ID)	Cross Section	Begin Station	End Station
280801	2″ AC Surface	78+00	84+00
	2″ AC Binder		
	8″ DGAB		
280802	2″ AC Surface	90+00	96+00
	2″ AC Binder		
	3″ AC Base*		
	12″ DGAB		

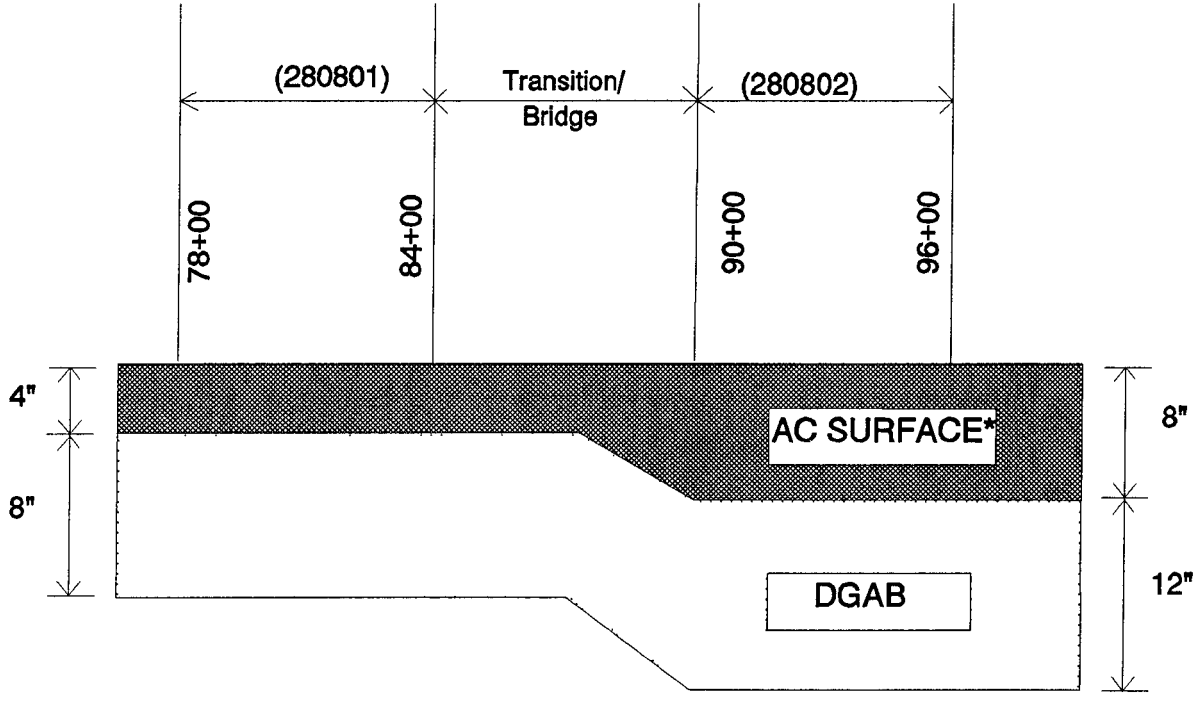
* If Binder mix is substituted for Base mix, this layer will not be present.

TABLE A-2. ORDERING OF SECTIONS ALONG CENTER LINE STATIONING

Begin Sta.	End Sta.	Section ID	Thickness (In.)	
			AC Surface*	DGAB
78+00	84+00	280801	4	8
84+00	90+00	Transition/Bridge	4-7	8-12
90+00	96+00	280802	7	12

* Combined Base, Binder and Wearing Course Thickness

FIGURE A-1. LAYOUT OF TEST SECTIONS
MISSISSIPPI SPS-8 (280800)



Prepared Subgrade

* Combined Base, Binder and Wearing Course Thickness

SECTION B

MATERIAL SAMPLING AND TESTING

SECTION B

MATERIAL SAMPLING AND TESTING

This section of the plan provides for the material sampling and testing activities that occur in the field. Tables B-1 and B-2 provide the scope of the material sampling and field testing activities, respectively. Table B-3 describes special sampling needs for the Materials Reference Library and provides contact information to coordinate sample shipping arrangements.

Figures B-1 through B-8 show the locations and numbering scheme for the many samples and tests scheduled. Figures B-2 through B-6 show the sampling and testing to occur for each stage of the paving, while Figures B-7 and B-8 show all sampling and testing scheduled for each test section.

Finally, Tables B-4 and B-5 list samples to be shipped to the state laboratory (or their designee), and those samples to be shipped to the FHWA/LTPP testing contractor, respectively. Shipment of samples to the FHWA/LTPP testing contractor, LAW Engineering in Atlanta, Georgia, should be coordinated through the Southern Region Coordination Office.

TABLE B-1. SCOPE OF MATERIAL SAMPLING

Material And Sample Description	Nº. Of Samples	Sample Location
Asphalt Concrete		
Coring - 4″ Diam. Cores	16	C1-C16
Bulk Sampling - Surface Mix (200 lb/sample)	3	BV7,BV8,BV9-From Plant
Bulk Sampling - Binder Mix (200 lb/sample)	3	BV4,BV5,BV6-From Plant
Bulk Sampling - Base Mix* (200 lb/sample)	3	BV1,BV2,BV3-From Plant
Bulk Sampling - Asphalt Cement (5 gal/sample)	3	BC1,BC2,BC3-From Plant
Dense-Graded Aggregate Base		
Bulk Sampling (400 lb/sample)	3	B4-B6
Moisture Content Samples	3	B4-B6
Subgrade		
Thin-Walled Tubes (2 per hole)	12	A1-A6
Bulk Sampling (400 lb/sample)	3	B1-B3
Moisture Content Samples	9	A1-A6, B1-B3
Permeability	1	A2
Expansion Index	3	B1-B3

* If Binder mix is substituted for the AC Base mix, this sampling will not be required.

TABLE B-2. SCOPE OF FIELD TESTING

Material And Test Description	Nº. Of Tests	Location Designation
Asphalt Concrete - Surface In Situ Density (Nuclear Gauge)	10	T22-T27, SA1-SA4
Asphalt Concrete - Binder In Situ Density (Nuclear Gauge)	10	T16-T21, SA1-SA4
Asphalt Concrete - Base* In Situ Density (Nuclear Gauge)	5	T13-T15, SA3-SA4
Dense-Graded Aggregate Base In Situ Density, Moisture Content (Nuclear Gauge)	6	T7-T12
Subgrade In Situ Density, Moisture Content (Nuclear Gauge)	9	T1-T6, B1-B3
Shoulder Auger Probe	2	S1-S2

* If Binder mix is substituted for the AC Base, this testing will not be required.

TABLE B-3. MATERIAL SAMPLING FOR THE MATERIALS REFERENCE LIBRARY (MRL)

Material And Sample Description	Nº. Of Samples	Sample Location
Asphalt Cement (5 Gallon Containers)	3	From Plant
Aggregate - Surface Gradation (55 Gallon Drum)	1	From Plant
Aggregate - Binder Gradation (55 Gallon Drum)	1	From Plant
Aggregate - Base Gradation* (55 Gallon Drum)	1	From Plant
Finished Asphaltic Concrete Mix - Surface (5 Gallon Containers)	3	From Paver
Finished Asphaltic Concrete Mix - Binder (5 Gallon Containers)	3	From Paver
Finished Asphaltic Concrete Mix - Base* (5 Gallon Containers)	3	From Paver

* If Binder mix is substituted for the AC Base, this sampling will not be required.

Note: Containers for this sampling will be provided by the LTPP Materials Reference Library (MRL). Scheduling information including (1) date containers needed, (2) state agency contact name, and (3) shipping address and telephone number should be provided to the MRL Contractor as soon as it is feasible to do so. The contact name, address and telephone number for the MRL Contractor are as follows:

Mr. Rod Soule
Nichols Consulting Engineers, Chtd.
1885 So. Arlington Ave., Suite 111
Reno, Nevada 89509
(702) 329-4955

These samples should be labeled according to applicable guidelines provided elsewhere and shipped to the MRL Contractor upon completion of sampling activities.

FIGURE B-1. SITE LAYOUT WITH SAMPLING AREAS
MISSISSIPPI SPS-8 (280800)

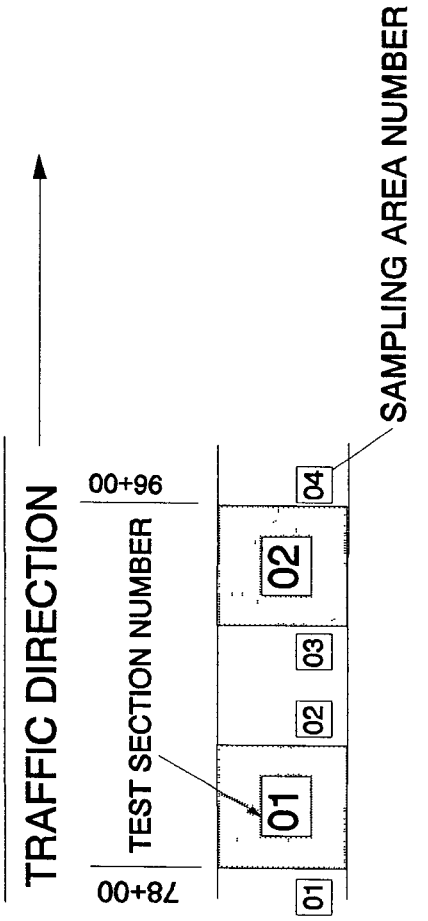
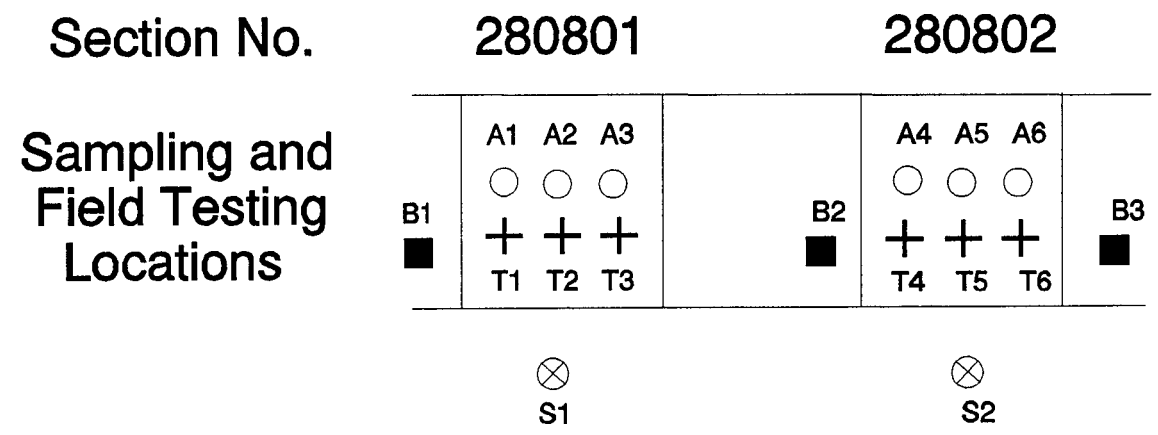


FIGURE B-2. SAMPLING AND TESTING LOCATIONS FOR SUBGRADE
MISSISSIPPI SPS-8 (280800)



LEGEND

■ 2 X 2 bulk sampling location (B1 - B3)

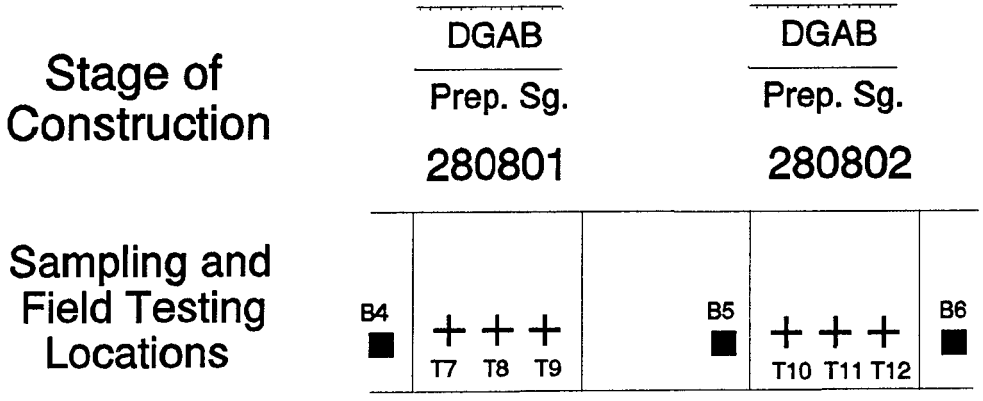
○ Shelby tube/splitspoon sampling to 4' below top of subgrade (A1 - A6).

⊗ Shoulder probe (S1 - S2)

\+ Location of in situ density testing (T1 - T6)

Note: Nuclear density/moisture testing must be conducted at bulk sampling locations prior to excavation.

FIGURE B-3. SAMPLING AND TESTING LOCATIONS FOR DGAB MISSISSIPPI SPS-8 (280800)



LEGEND

\+ Location of in situ density testing (T7 - T12)

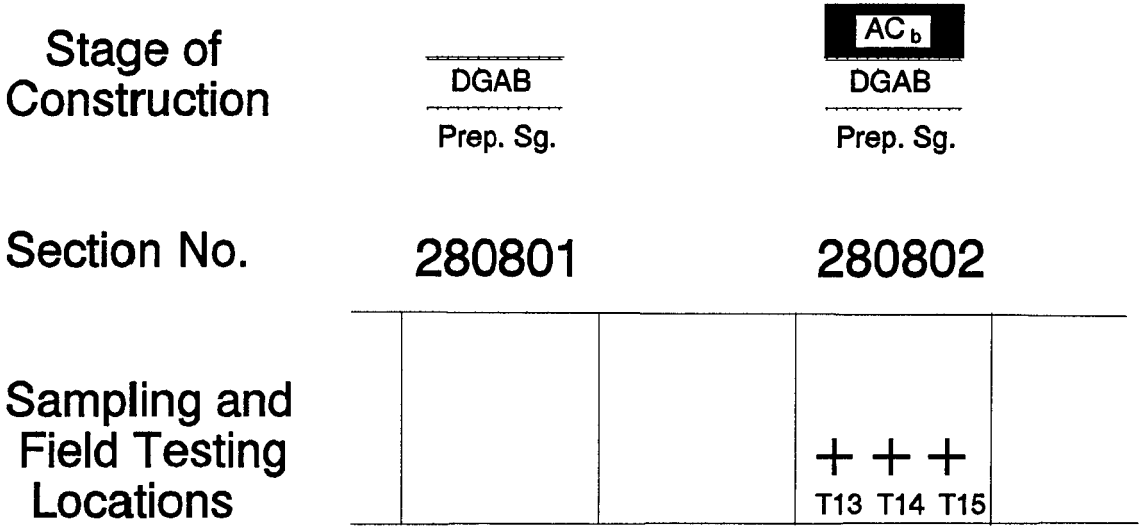
■ Location of bulk sampling of DGAB (B4 - B6)

Note: Nuclear density/moisture testing must be conducted at bulk sampling locations prior to excavation.

Prep. Sg. - Prepared Subgrade

DGAB - Dense Graded Aggregate Base

FIGURE B-4. SAMPLING AND TESTING LOCATIONS FOR AC BASE*
MISSISSIPPI SPS-8 (280800)



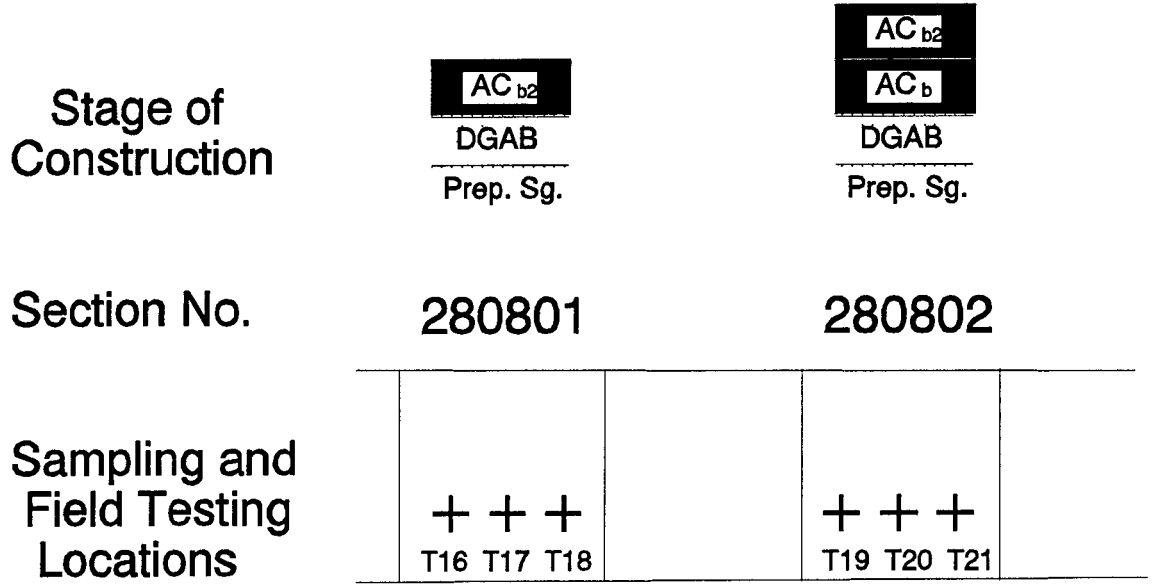
LEGEND

+ Location of in situ density testing (T13 - T15)

Prep. Sg. - Prepared Subgrade
DGAB - Dense Graded Aggregate Base
AC_b - Asphalt Concrete Base

* If Binder mix is substituted for the Base Mix, this testing will not be required.

FIGURE B-5. SAMPLING AND TESTING LOCATIONS FOR AC BINDER MISSISSIPPI SPS-8 (280800)



LEGEND

+ Location of in situ density testing (T16 - T21)

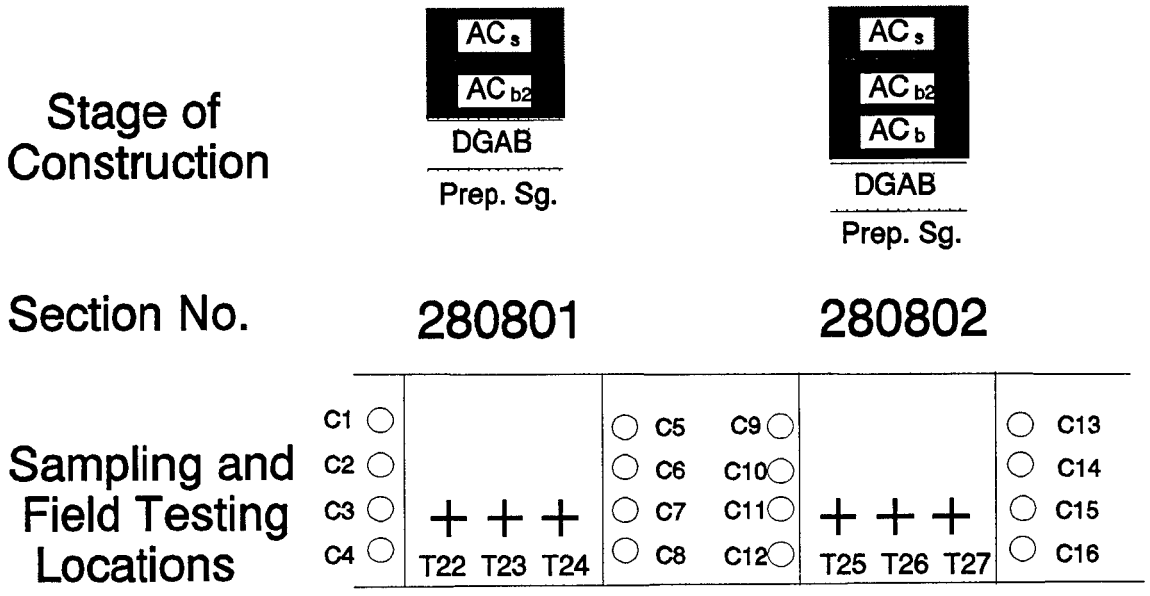
Prep. Sg. - Prepared Subgrade

DGAB - Dense Graded Aggregate Base

AC_b - Asphalt Concrete Base

AC_{b2} - Asphalt Concrete Binder

FIGURE B-6. SAMPLING AND TESTING LOCATIONS FOR AC SURFACE MISSISSIPPI SPS-8 (280800)



LEGEND

○ 4" OD Core of Asphalt Concrete Surface, Binder and Base (C1 - C16)

+ Location of in situ density testing (T22 - T27)

Prep. Sg. - Prepared Subgrade

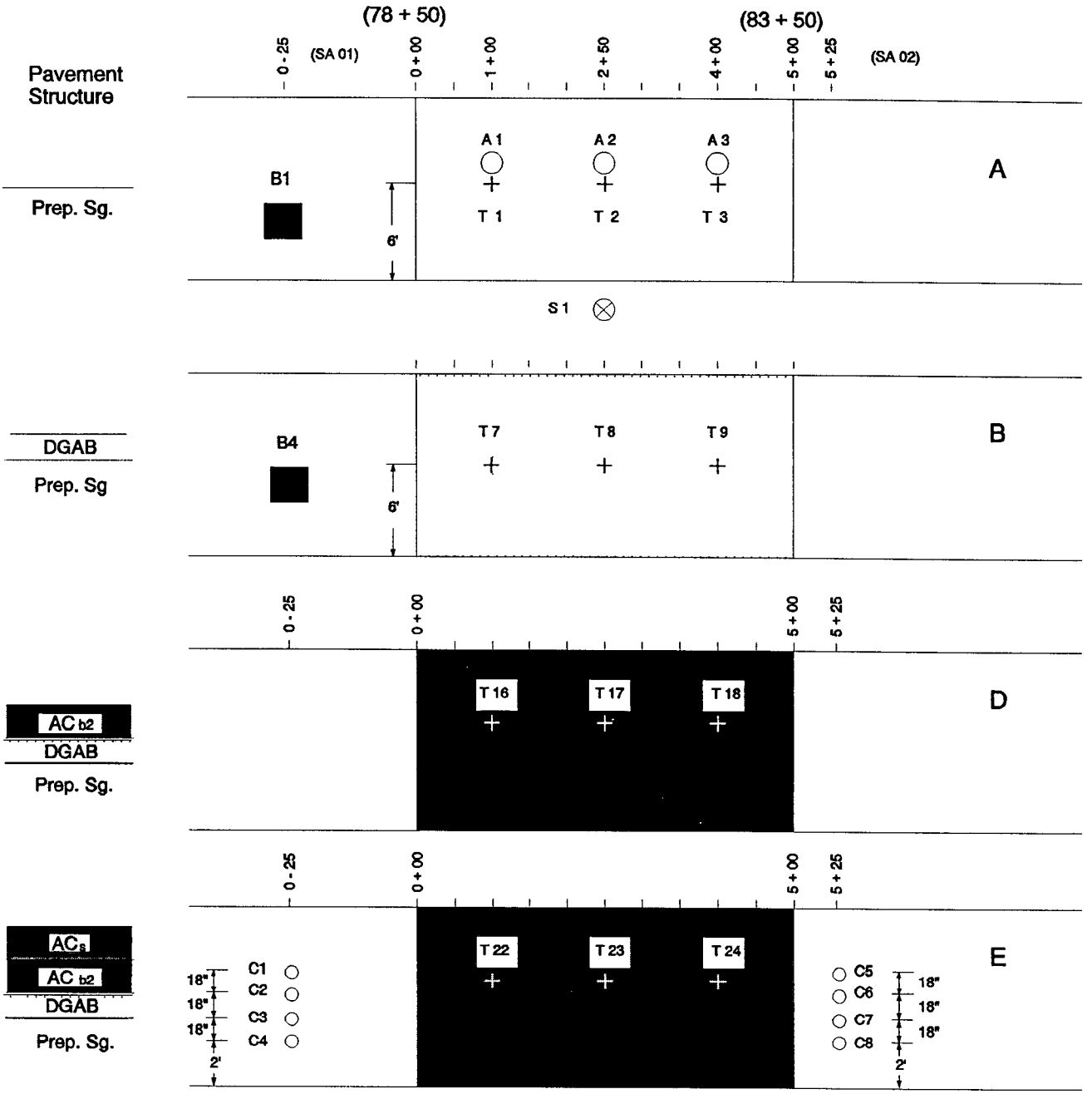
DGAB - Dense Graded Aggregate Base

AC_b - Asphalt Concrete Base

AC_{b2} - Asphalt Concrete Binder

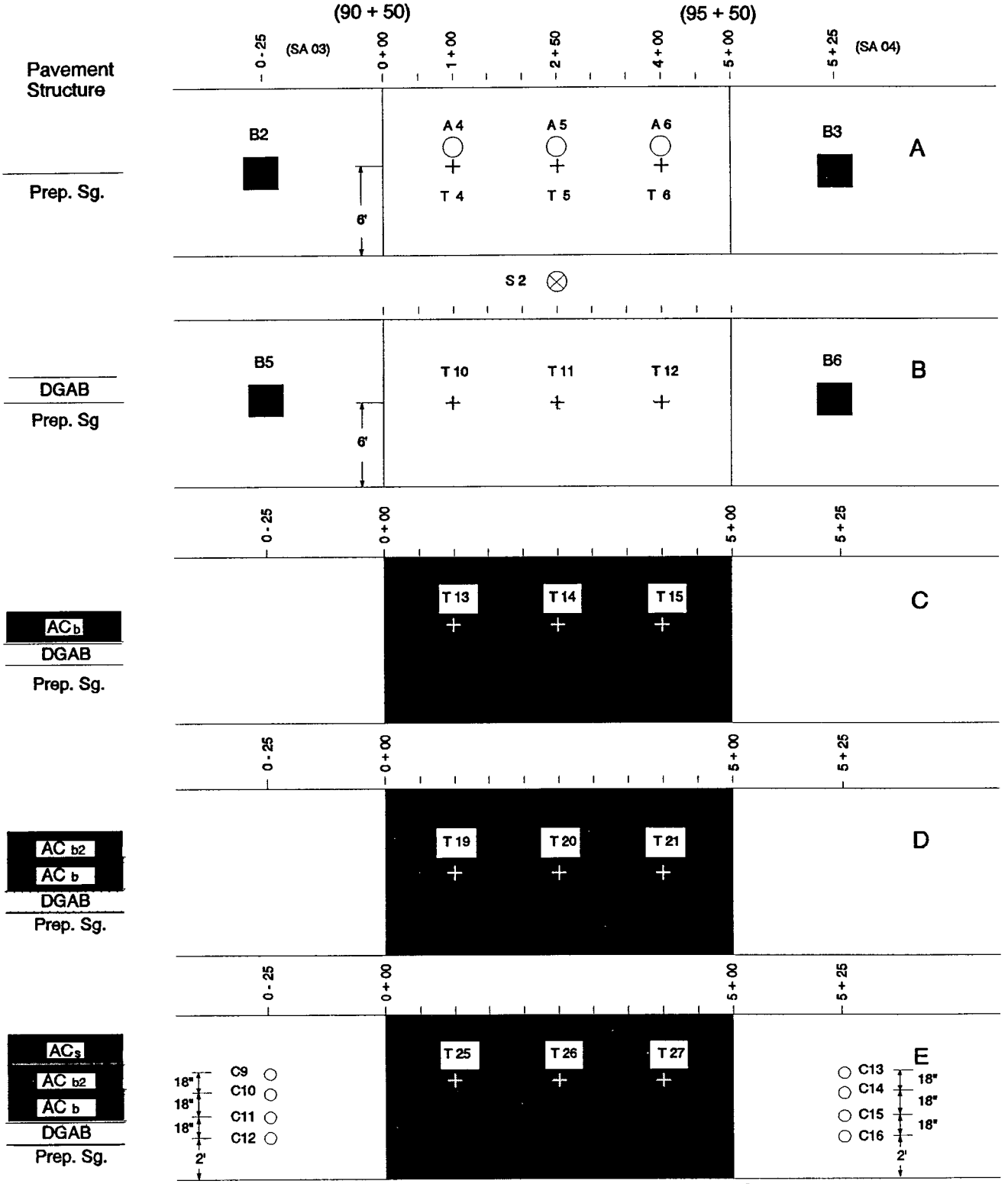
AC_s - Asphalt Concrete Surface

FIGURE B-7. SAMPLING AND TESTING PLAN FOR TEST SECTION 280801



A Testing on prepared Subgrade (T1 - T3, A1 - A3, S1, B1)
B Testing on compacted DGAB (T7 - T9, B4)
D Testing on AC Binder (T16 - T18)
E Testing on finished AC Surface (T22 - T24)
Coring AC Surface (C1 - C8)

FIGURE B-8. SAMPLING AND TESTING PLAN FOR TEST SECTION 280802



A Testing on prepared Subgrade (T4 - T6, A4 - A6, S2, B2, B3)
B Testing on compacted DGAB (T10 - T12, B5, B6)
C Testing on AC Base (T13 - T15)
D Testing on AC Binder (T19 - T21)
E Testing on finished AC Surface (T25 - T27)
Coring AC Surface (C9 - C16)

TABLE B-4. SAMPLES TO BE SHIPPED TO THE STATE LABORATORY (OR THEIR DESIGNEE)

Sample Location	Sample Number	Lab Test Number	Type of Sample
Asphalt Concrete Surface			
BV7	BA07	3	91 kg (200 lb) bulk sample
BV8	BA08	3	91 kg (200 lb) bulk sample
BV9	BA09	3	91 kg (200 lb) bulk sample
BC1	BC01	3	19 l (5 gal) bulk sample of asphalt cement
BC2	BC02	3	19 l (5 gal) bulk sample of asphalt cement
BC3	BC03	3	19 l (5 gal) bulk sample of asphalt cement
Asphalt Concrete Binder			
BV4	BA04	3	91 kg (200 lb) bulk sample
BV5	BA05	3	91 kg (200 lb) bulk sample
BV6	BA06	3	91 kg (200 lb) bulk sample
Asphalt Concrete Base*			
BV1	BA01	3	91 kg (200 lb) bulk sample
BV2	BA02	3	91 kg (200 lb) bulk sample
BV3	BA03	3	91 kg (200 lb) bulk sample
Dense-Graded Aggregate Base			
B4	BG01	1	45 kg (100 lb) bulk sample
B5	BG02	1	45 kg (100 lb) bulk sample
B6	BG03	2	45 kg (100 lb) bulk sample
Subgrade			
B1	BS01	1	45 kg (100 lb) bulk sample
B2	BS02	1	45 kg (100 lb) bulk sample
B3	BS03	2	45 kg (100 lb) bulk sample
A2	TS03, TS04	3	Thin-Wall Tube
A4	TS07, TS08	3	Thin-Wall Tube
A6	TS11, TS12	3	Thin-Wall Tube

* If Binder mix is substituted for Base mix, this item will not be required.

TABLE B-5. SAMPLES TO BE SHIPPED TO THE FHWA-LTPP TESTING CONTRACTOR LABORATORY

Sample Location	Sample Number	Lab Test Number	Type of Sample
Asphalt Concrete (Surface, Binder, Base)			
C1	CA01	1	102 mm (4 in.) Core
C2	CA02	1	102 mm (4 in.) Core
C3	CA03	1	102 mm (4 in.) Core
C4	CA04	1	102 mm (4 in.) Core
C5	CA05	2	102 mm (4 in.) Core
C6	CA06	2	102 mm (4 in.) Core
C7	CA07	2	102 mm (4 in.) Core
C8	CA08	2	102 mm (4 in.) Core
C9	CA09	1	102 mm (4 in.) Core
C10	CA10	1	102 mm (4 in.) Core
C11	CA11	1	102 mm (4 in.) Core
C12	CA12	1	102 mm (4 in.) Core
C13	CA13	2	102 mm (4 in.) Core
C14	CA14	2	102 mm (4 in.) Core
C15	CA15	2	102 mm (4 in.) Core
C16	CA16	2	102 mm (4 in.) Core
Dense-Graded Aggregate Base			
B4	BG01	1	136 kg (300 lb) Bulk Sample
B5	BG02	1	136 kg (300 lb) Bulk Sample
B6	BG03	2	136 kg (300 lb) Bulk Sample
B4	MG01	1	Moisture Content Jar Sample
B5	MG02	1	Moisture Content Jar Sample
B6	MG03	2	Moisture Content Jar Sample

TABLE B-5. SAMPLES TO BE SHIPPED TO THE FHWA-LTPP TESTING CONTRACTOR LABORATORY (Continued)

Sample Location	Sample Number	Lab Test Number	Type of Sample
Subgrade			
B1	BS01	1	136 kg (300 lb) Bulk Sample
B2	BS02	1	136 kg (300 lb) Bulk Sample
B3	BS03	2	136 kg (300 lb) Bulk Sample
A1	TS01	3	Thin wall Tube Sample
A1	TS02	3	Thin wall Tube Sample
A3	TS05	3	Thin wall Tube Sample
A3	TS06	3	Thin wall Tube Sample
A5	TS09	3	Thin wall Tube Sample
A5	TS10	3	Thin wall Tube Sample
B1	MS01	1	Moisture Content Jar Sample
B2	MS02	1	Moisture Content Jar Sample
B3	MS03	2	Moisture Content Jar Sample

SECTION C

LABORATORY MATERIAL TESTING

SECTION C

LABORATORY MATERIAL TESTING

It is the intent of this section of the sampling and testing plan to provide an outline for the laboratory testing that is planned for the Mississippi SPS-8 project. The previous section ended with lists of samples to be shipped to each of two laboratories; the state designated laboratory and the FHWA/LTPP contracted laboratory. In this section, the tests to be performed on each sample are listed.

Table C-1 provides a reference project layer numbering scheme. It is important that the two laboratories reference the same layer by number to ensure meaningful results.

Table C-2 provides a listing of the tests to be performed for each material type and pavement layer, and the associated laboratory testing protocol. It is imperative that the protocols listed be strictly followed during testing.

Tables C-3 through C-6 provide tracking tables for the state designated laboratory for each material type. These tables itemize the testing to occur on each sample and provide an indication of whether the sample is to be disposed of. Tables C-7 through C-10 provide similar information for the FHWA/LTPP contracted laboratory.

TABLE C-1. PROJECT LAYER NUMBERING

Layer №.	LTPP Description	Mississippi Description
1	Subgrade	Subgrade
2	Dense Graded Aggregate Base (DGAB)	Granular Material; Class 3, Group D
3*	Hot Mix Asphalt Concrete Base Course	Plant Mix Bituminous Base Course (BB-1)
4	Hot Mix Asphalt Concrete Binder Course	Hot Bituminous Pavement, Binder Course
5	Hot Mix Asphalt Concrete Surface Course	Hot Bituminous Pavement, Surface Course

* If Binder mix (Hot Bituminous Pavement, Binder Course) is substituted for the Base mix (Plant Mix Bituminous Base Course BB-1), this layer will not be present and the Binder and Surface Courses will be Layers 3 and 4, respectively.

TABLE C-2. SAMPLES TO BE USED FOR LABORATORY MATERIALS TESTING

Material Type and Properties	LTPP Designation	LTPP Protocol	Minimum Nº. of Tests per Layer	Sampling Location	Test Conducted by: State	FHWA
SUBGRADE						
Sieve Analysis	SS01	P51	3	B1-B3		X
Hydrometer to 0 001 mm	SS02	P42	3	B1-B3		X
Atterberg Limits	SS03	P43	3	B1-B3		X
Classification	SS04	P52	3	B1-B3		X
(Visual-manual only on thin-wall tubes)			6	A1-A6	X	X
Moisture-Density Relations	SS05	P55	3	B1-B3		X
Resilient Modulus	SS07	P46	3	A1, A3, A5		X
Unit Weight (If thin-wall tube is not available, test is not conducted)	SS08	P56	3	A2, A4, A6	X	
Natural Moisture Content	SS09	P49	3	B1-B3		X
Unconfined Comp. Strength (If thin-wall tube is not available, test is not conducted)	SS10	P54	2	A2, A4	X	
Permeability	SS11	P57	1	A2	X	
In-Place Density		SHRP-LTPP Method	9	B1-B3, T1-T6	X	
Depth to Rigid Layer		SHRP-LTPP Method	2	S1, S2	X	
Expansion Index	SS12	P60	3	B1-B3		?
DENSE GRADED AGGREGATE BASE						
Particle Size Analysis	UG01	P41	3	B4-B6		X
Sieve Analysis (Washed)	UG02	P41	3	B4-B6		X
Atterberg Limits	UG04	P43	3	B4-B6		X
Moisture-Density Relations	UG05	P44	3	B4-B6		X
Resilient Modulus	UG07	P46	3	B4-B6		X
Classification	UG08	P47	3	B4-B6		X
Permeability	UG09	P48	3	B4-B6	X	
Natural Moisture Content	UG10	P49	3	B4-B6		X
In-Place Density		SHRP-LTPP Method	6	T7-T12	X	

TABLE C-2. SAMPLES TO BE USED FOR LABORATORY MATERIALS TESTING (Continued)

Material Type and Properties	LTPP Designation	LTPP Protocol	Minimum №. of Tests per Layer	Sampling Location	Test Conducted by: State	FHWA
ASPHALTIC CONCRETE BASE*						
Core Examination/Thickness	AC01	P01	8	C9-C16		X
Bulk Specific Gravity	AC02	P02	8	C9-C16		X
Maximum Specific Gravity	AC03	P03	3	BV1-BV3 From Paver	X	
Asphalt Content (Extraction)	AC04	P04	3	BV1-BV3 From Paver	X	
Moisture Susceptibility	AC05	P05	3	BV1-BV3 From Paver	X	
Creep Compliance	AC06	P06	1	C9		X
Resilient Modulus	AC07	P07	2	C9-C11,C13-C15		X
Tensile Strength	AC07	P07	2	C12, C16		X
In-Place Density		SHRP-LTPP Method	3	T13-T15	X	
Extracted Aggregate						
Specific Gravity:						
Coarse Aggregate	AG01	P11	3	BV1-BV3 From Paver	X	
Fine Aggregate	AG02	P12	3	BV1-BV3 From Paver	X	
Gradation of Aggregate	AG04	P14A	3	BV1-BV3 From Paver	X	
NAA Test for Fine Aggregate	AG05	P14B	3	BV1-BV3 From Paver	X	
Asphalt Cement (Abson Recovery)						
Abson Recovery	AE01	P21	3	BV1-BV3 From Paver	X	
Penetration at 4°C, 25°C, 32°C (50°F, 77°F, 90°F)	AE02	P22	3	BV1-BV3 From Paver	X	
Specific Gravity 16°C (60°F)	AE03	P23	3	BV1-BV3 From Paver	X	
Viscosity at 25°C (77°F)	AE04	P24	3	BV1-BV3 From Paver	X	
Viscosity at 60°C, 135°C (140°F, 275°F)	AE05	P25	3	BV1-BV3 From Paver	X	

* If Binder mix is substituted for Base mix, this testing will not be required.

TABLE C-2. SAMPLES TO BE USED FOR LABORATORY MATERIALS TESTING (Continued)

Material Type and Properties	LTPP Designation	LTPP Protocol	Minimum Nº. of Tests per Layer	Sampling Location	Test Conducted by: State	FHWA
ASPHALTIC CONCRETE BINDER						
Core Examination/Thickness	AC01	P01	16	All Cores		X
Bulk Specific Gravity	AC02	P02	16	All Cores		X
Maximum Specific Gravity	AC03	P03	3	BV4-BV6 From Paver	X	
Asphalt Content (Extraction)	AC04	P04	3	BV4-BV6 From Paver	X	
Moisture Susceptibility	AC05	P05	3	BV4-BV6 From Paver	X	
Creep Compliance	AC06	P06	1	C9		X
Resilient Modulus	AC07	P07	3	C1-C3,C5-C7,C13-C15		X
Tensile Strength	AC07	P07	3	C4, C8, C16		X
In-Place Density		SHRP-LTPP Method	6	T16-T21	X	
Extracted Aggregate						
Specific Gravity:						
Coarse Aggregate	AG01	P11	3	BV4-BV6 From Paver	X	
Fine Aggregate	AG02	P12	3	BV4-BV6 From Paver	X	
Gradation of Aggregate	AG04	P14A	3	BV4-BV6 From Paver	X	
NAA Test for Fine Aggregate	AG05	P14B	3	BV4-BV6 From Paver	X	
Asphalt Cement (Abson Recovery)						
Abson Recovery	AE01	P21	3	BV4-BV6 From Paver	X	
Penetration at 4°C, 25°C, 32°C (50°F, 77°F, 90°F)	AE02	P22	3	BV4-BV6 From Paver	X	
Specific Gravity 16°C (60°F)	AE03	P23	3	BV4-BV6 From Paver	X	
Viscosity at 25°C (77°F)	AE04	P24	3	BV4-BV6 From Paver	X	
Viscosity at 60°C, 135°C (140°F, 275°F)	AE05	P25	3	BV4-BV6 From Paver	X	

TABLE C-2. SAMPLES TO BE USED FOR LABORATORY MATERIALS TESTING (Continued)

Material Type and Properties	LTPP Designation	LTPP Protocol	Minimum Nº. of Tests per Layer	Sampling Location	Test Conducted by: State	FHWA
ASPHALTIC CONCRETE SURFACE						
Core Examination/Thickness	AC01	P01	16	All Cores		X
Bulk Specific Gravity	AC02	P02	16	All Cores		X
Maximum Specific Gravity	AC03	P03	3	BV7-BV9 From Paver	X	
Asphalt Content (Extraction)	AC04	P04	3	BV7-BV9 From Paver	X	
Moisture Susceptibility	AC05	P05	3	BV7-BV9 From Paver	X	
Creep Compliance	AC06	P06	1	C9		X
Resilient Modulus	AC07	P07	3	C1-C3,C5-C7,C13-C15		X
Tensile Strength	AC07	P07	3	C4, C8, C16		X
In-Place Density		SHRP-LTPP Method	6	T22-T27	X	
Extracted Aggregate:						
Specific Gravity.						
Coarse Aggregate	AG01	P11	3	BV7-BV9 From Paver	X	
Fine Aggregate	AG02	P12	3	BV7-BV9 From Paver	X	
Gradation of Aggregate	AG04	P14	3	BV7-BV9 From Paver	X	
NAA Test for Fine Aggregate	AG05	P14A	3	BV7-BV9 From Paver	X	
Asphalt Cement (Abson Recovery)						
Abson Recovery	AE01	P21	3	BV7-BV9 From Paver	X	
Penetration at 4°C, 25°C, 32°C (50°F, 77°F, 90°F)	AE02	P22	3	BV7-BV9 From Paver	X	
Specific Gravity 16°C (60°F)	AE03	P23	3	BV7-BV9 From Paver	X	
Viscosity at 25°C (77°F)	AE04	P24	3	BV7-BV9 From Paver	X	
Viscosity at 60°C, 135°C (140°F, 275°F)	AE05	P25	3	BV7-BV9 From Paver	X	
Asphalt Cement (From Tanker or Plant)						
Penetration at 4°C, 25°C, 32°C (50°F, 77°F, 90°F)	AE02	P22	3	BC1-BC3 From Paver	X	
Specific Gravity 16°C (60°F)	AE03	P23	3	BC1-BC3 From Paver	X	
Viscosity at 25°C (77°F)	AE04	P24	3	BC1-BC3 From Paver	X	
Viscosity at 60°C, 135°C (140°F, 275°F)	AE05	P25	3	BC1-BC3 From Paver	X	

TABLE C.3. TRACKING TABLE OF ASPHALTIC CONCRETE TESTING IN THE STATE LABORATORY (OR THEIR DESIGNEE)

Sample Location	Sample Number	Lab Test Number (1)	Steps Involved in Laboratory Handling and Testing Sequence						
			Required Laboratory Tests Per Layer				Extra Sample (2)	Sample Storage (3)	Sample Disposed? (4)
			First	Second	Third	Fourth			
BV1*	BA01	3	See Figure C.1				No	(a)	Yes
BV2*	BA02	3	See Figure C.1				No	(a)	Yes
BV3*	BA03	3	See Figure C 1				No	(a)	Yes
BV4	BA04	3	See Figure C.1				No	(a)	Yes
BV5	BA05	3	See Figure C.1				No	(a)	Yes
BV6	BA06	3	See Figure C 1				No	(a)	Yes
BV7	BA07	3	See Figure C 1				No	(a)	Yes
BV8	BA08	3	See Figure C.1				No	(a)	Yes
BV9	BA09	3	See Figure C.1				No	(a)	Yes
BC1	BC01	3	AE02/P22	AE03/P23	AE04/P24	AE05/P25	No	(a)	Yes
BC2	BC02	3	AE02/P22	AE03/P23	AE04/P24	AE05/P25	No	(a)	Yes
BC3	BC03	3	AE02/P22	AE03/P23	AE04/P24	AE05/P25	No	(a)	Yes

* If Binder mix is substituted for Base mix, this testing will not be required.

Note: All of the core specimens noted herein shall be stored for possible future use. In the future, these specimens may be used to evaluate test procedures for the SUPERPAVE program

(1) Lab Test Number - Shall be assigned as per the following.
- a. Beginning of the Section (Station 0-): Samples of each layer that are retrieved from areas in the approach end of the test section (stations preceding 0+00) shall be assigned Laboratory Test Number '1'
- b End of Section (Stations 5+). Samples of each layer that are retrieved from areas in the leave end of the test section (stations after 5+00) shall be assigned Laboratory Test Number '2'
- c Middle of the Section (Stations 0+00 to 5+00). Samples of each layer that are retrieved from areas in the middle of the test section (from the paver) shall be assigned Laboratory Test Number '3'.

(2) Extra Sample - Is the sample to be saved as a backup for other tests? A "yes" in this column implies that this is a dedicated extra sample saved from future use A "no" indicates that a sample can be discarded after use.

(3) Sample Storage
- a. Environmentally protected and controlled storeroom at 5-21°C (40-70°F)
- b Environmentally protected and controlled storeroom at 5-38°C (40-100°F).
- c. Thin-walled tube samples of the subgrade that should be stored in a fully supported condition and at temperatures between 5°C (40°F) and 21°C (70°F) in an environmentally protected storeroom. They shall be stored on their ends and shall always be stored in a vertical position with respect to the longitudinal axis of the tube in the same orientation as that retrieved from the field

(4) Sample Disposal? - Indicates whether or not a sample can be disposed of after testing Generally, all samples or portions of samples that are tested are saved until further notice

TABLE C-4. TRACKING TABLE OF DENSE GRADED AGGREGATE BASE TESTING IN THE STATE LABORATORY (OR THEIR DESIGNEE)

Sample Location	Sample Number	Lab Test Number (1)	Steps Involved in Laboratory Handling and Testing Sequence						
			Required Laboratory Tests Per Layer				Extra Sample (2)	Sample Storage (3)	Sample Disposed? (4)
			First	Second	Third	Fourth			
B4	BG01	1	UG09/P48				No	(b)	Yes
B5	BG02	1	UG09/P48				No	(b)	Yes
B6	BG03	2	UG09/P48				No	(b)	Yes

TABLE C-5. TRACKING TABLE OF SUBGRADE TESTING IN THE STATE LABORATORY (OR THEIR DESIGNEE)

Sample Location	Sample Number	Lab Test Number (1)	Steps Involved in Laboratory Handling and Testing Sequence						
			Required Laboratory Tests Per Layer				Extra Sample (2)	Sample Storage (3)	Sample Disposed? (4)
			First	Second	Third	Fourth			
B1	BS01	1	No testing - samples stored				Yes	(b)	No
B2	BS02	1	No testing - samples stored				Yes	(b)	No
B3	BS03	2	No testing - samples stored				Yes	(b)	No
A2	TS03	3	SS04/P52	SS08/P56	SS10/P54		No	(c)	Yes
A4	TS07	3	SS04/P52	SS08/P56	SS10/P54		No	(c)	Yes
A6	TS11	3	SS04/P52				No	(c)	Yes
A2	TS04	3					Yes	(c)	No
A4	TS08	3					Yes	(c)	No
A6	TS12	3					Yes	(c)	No

TABLE C-6. TRACKING TABLE OF ASPHALTIC CONCRETE TESTING IN THE FHWA-LTPP TESTING CONTRACTOR LABORATORY

Sample Location	Sample Number	Lab Test Number (1)	Steps Involved in Laboratory Handling and Testing Sequence						
			Required Laboratory Tests Per Layer				Extra Sample (2)	Sample Storage (3)	Sample Disposed? (4)
			First	Second	Third	Fourth			
C1	CA01	1	AC01/P01	AC02/P02	AC07/P07		No	(a)	Yes
C2	CA02	1	AC01/P01	AC02/P02	AC07/P07		No	(a)	Yes
C3	CA03	1	AC01/P01	AC02/P02	AC07/P07		No	(a)	Yes
C4	CA04	1	AC01/P01	AC02/P02		AC07/P07 (ITS)	No	(a)	Yes
C5	CA05	2	AC01/P01	AC02/P02	AC07/P07		No	(a)	Yes
C6	CA06	2	AC01/P01	AC02/P02	AC07/P07		No	(a)	Yes
C7	CA07	2	AC01/P01	AC02/P02	AC07/P07		No	(a)	Yes
C8	CA08	2	AC01/P01	AC02/P02		AC07/P07 (ITS)	No	(a)	Yes
C9	CA09	1	AC01/P01	AC02/P02	AC06/P06		No	(a)	Yes
C10	CA10	1	AC01/P01	AC02/P02			No	(a)	Yes
C11	CA11	1	AC01/P01	AC02/P02			No	(a)	Yes
C12	CA12	1	AC01/P01	AC02/P02			No	(a)	Yes
C13	CA13	2	AC01/P01	AC02/P02	AC07/P07		No	(a)	Yes
C14	CA14	2	AC01/P01	AC02/P02	AC07/P07		No	(a)	Yes
C15	CA15	2	AC01/P01	AC02/P02	AC07/P07		No	(a)	Yes
C16	CA16	2	AC01/P01	AC02/P02		AC07/P07 (ITS)	No	(a)	Yes

TABLE C-7. TRACKING TABLE OF DENSE GRADED AGGREGATE BASE TESTING IN THE FHWA-LTPP TESTING CONTRACTOR LABORATORY

Sample Location	Sample No.	Lab Test No. (1)	Steps Involved in Laboratory Handling and Testing Sequence								
			Required Laboratory Tests Per Layer						Extra Sample (2)	Sample Storage (3)	Sample Disposed ? (4)
			First	Second	Third	Fourth	Fifth	Sixth			
B4	BG01	1	UG01/P41	UG02/P41	UG04/P43	UG08/P47	UG05/P44	UG07/P46	No	(b)	Yes
B5	BG02	1	UG01/P41	UG02/P41	UG04/P43	UG08/P47	UG05/P44	UG07/P46	No	(b)	Yes
B6	BG03	2	UG01/P41	UG02/P41	UG04/P43	UG08/P47	UG05/P44	UG07/P46	No	(b)	Yes
B4	MG01	1	UG10/P49						No	(b)	Yes
B5	MG02	1	UG10/P49						No	(b)	Yes
B6	MG03	2	UG10/P49						No	(b)	Yes

TABLE C-8. TRACKING TABLE OF SUBGRADE TESTING IN THE FHWA-LTPP TESTING CONTRACTOR LABORATORY

Sample Location	Sample No.	Lab Test No. (1)	Steps Involved in Laboratory Handling and Testing Sequence								
			Required Laboratory Tests Per Layer						Extra Sample (2)	Sample Storage (3)	Sample Disposed ? (4)
			First	Second	Third	Fourth	Fifth	Sixth			
B1	BS01	1	SS01/P51	SS02/P42	SS03/P43	SS04/P52	SS05/P55		No	(b)	Yes
B2	BS02	1	SS01/P51	SS02/P42	SS03/P43	SS04/P52	SS05/P55		No	(b)	Yes
B3	BS03	2	SS01/P51	SS02/P42	SS03/P43	SS04/P52	SS05/P55		No	(b)	Yes
A1	TS01	3	SS04/P52	SS07/P46					No	(c)	Yes
A3	TS05	3	SS04/P52	SS07/P46					No	(c)	Yes
A5	TS09	3	SS04/P52	SS07/P46					No	(c)	Yes
B1	MS01	1	SS09/P49	SS07/P46 *					No	(b)	Yes
B2	MS02	1	SS09/P49	SS07/P46 *					No	(b)	Yes
B3	MS03	2	SS09/P49	SS07/P46 *					No	(b)	Yes
A1	TS02	3							Yes	(c)	No
A3	TS06	3							Yes	(c)	No
A5	TS10	3							Yes	(c)	No

* **Note:** SS07/P46 testing for bulk subgrade samples only required when tube samples are not available or suitable for testing.

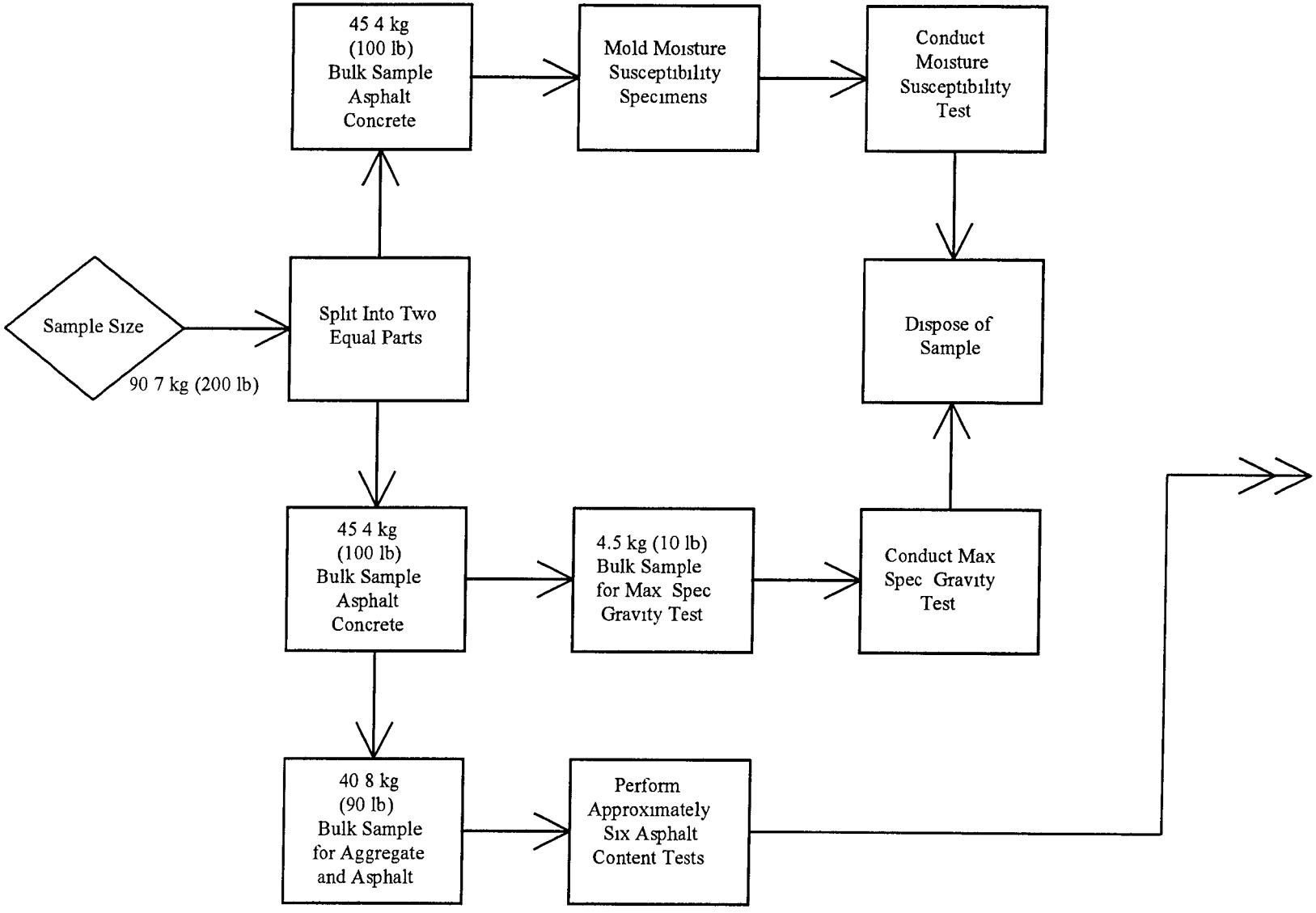


FIGURE C-1. FLOWCHART FOR ASPHALT CONCRETE BULK SAMPLES

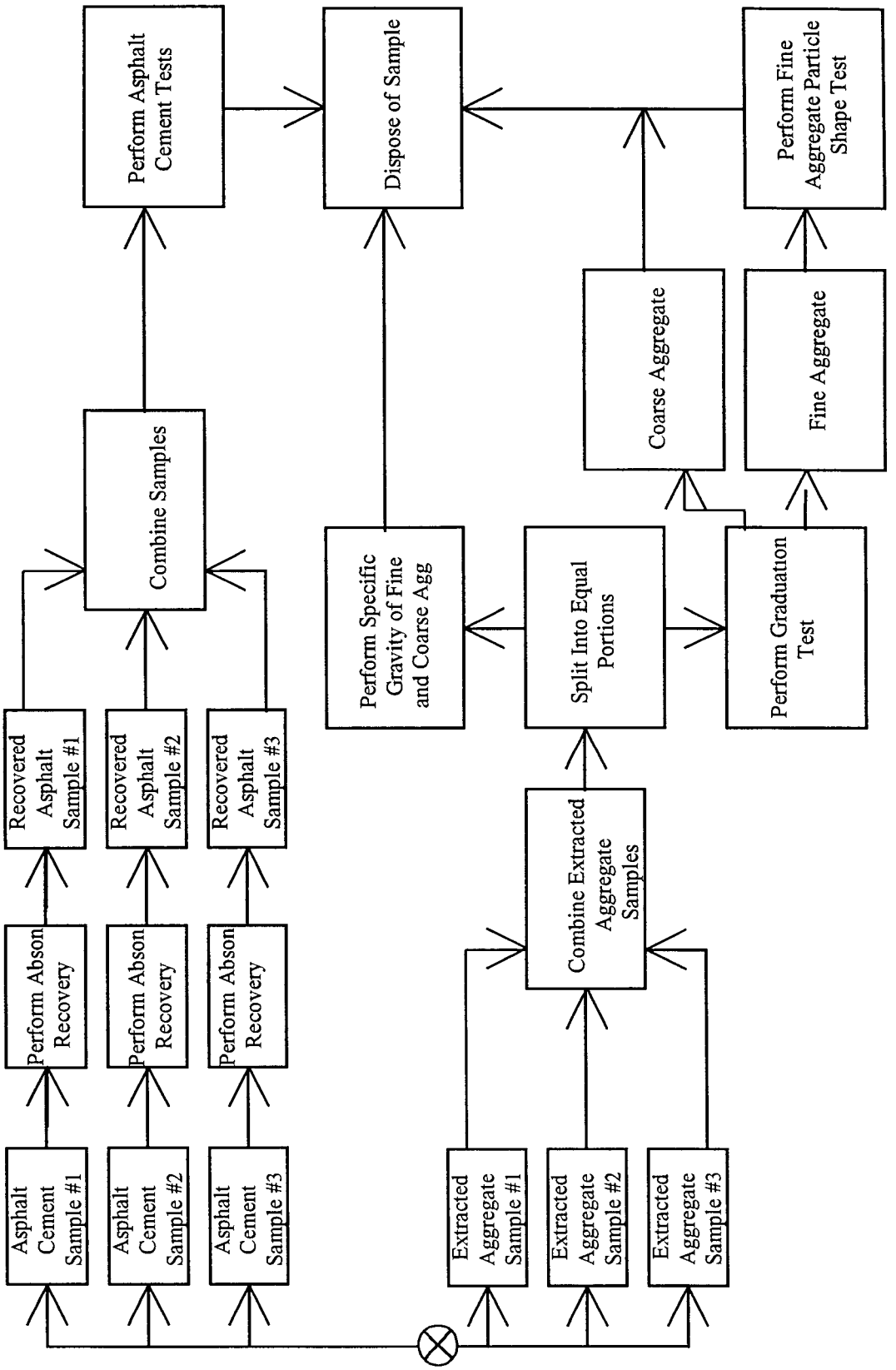


FIGURE C-1. FLOWCHART FOR ASPHALT CONCRETE BULK SAMPLES (Continued)

APPENDIX D

CONSTRUCTION DATA

SPS-8 CONSTRUCTION DATA SHEET 3 REFERENCE PROJECT STATION TABLE	* STATE CODE [2 8] * SPS PROJECT CODE [0 8] * TEST SECTION NO. [0 8]

ORDER	*1 TEST SECTION ID NO	REFERENCE PROJECT STATION NUMBER		*4 CUT-FILL[1] TYPE
		*2 START	*3 END	
1	280801	0+00	5+00	#2 SB 7-22-97
2	280802	12+00	17+00	#2
3		+__	+__	
4		+__	+__	
5		+__	+__	
6		+__	+__	
7		+__	+__	
8		+__	+__	
9		+__	+__	
10		+__	+__	
11		+__	+__	
12		+__	+__	
13		+__	+__	
14		+__	+__	
15		+__	+__	
16		+__	+__	
17		+__	+__	
18		+__	+__	
19		+__	+__	
20		+__	+__	

*5 INTERSECTIONS BETWEEN TEST SECTION ON THE PROJECT

ROUTE	PROJECT STATION NO.	RAMPS EXIT	RAMPS ENT	INTERSECTION STOP	INTERSECTION SIGNAL	INTERSECTION UNSIG
	+__					
	+__					
	+__					

Note 1. Indicate the type of subgrade construction the test section is located on:
Cut... 1 Fill... 2 At-Grade... 3 Cut, Fill, and At-Grade Combo... 4

If a section contains any combination of cut, fill and at-grade portions (code 4 above), enter the specific details of the cut, fill and at-grade locations on SPS-8 Construction Data Sheet 15.

PREPARER [signature] EMPLOYER BKE DATE 7/21/97

SPS-8 CONSTRUCTION DATA SHEET 1 PROJECT IDENTIFICATION	* STATE CODE [2 8] * SPS PROJECT CODE [0 8] * TEST SECTION NO. [0 1]

*1. DATE OF DATA COLLECTION OR UPDATE (Month/Year) [1 0/9 6]

*2. STATE HIGHWAY AGENCY (SHA) DISTRICT NUMBER [0 2.]

*3. COUNTY OR PARISH [1 0 7.]

4. FUNCTIONAL CLASS (SEE TABLE A.2, APPENDIX A) [2 8.]

*5. ROUTE SIGNING (NUMERIC CODE) [3.]
Interstate... 1 U.S.... 2 State... 3
Other... 4

*6. ROUTE NUMBER [_ _ 3 1 5.]

7. TYPE OF PAVEMENT (01 for Granular Base, 02 for Treated Base) [0 1.]

8. NUMBER OF THROUGH LANES (ONE DIRECTION) [1.]

*9. DATE OF CONSTRUCTION COMPLETION (Month/Year) [1 0/9 6]

*10. DATE OPENED TO TRAFFIC (Month/Year) [1 1/9 6]

11. CONSTRUCTION COSTS PER LANE MILE (In $1000) [_ _ _ _ _.]

12. DIRECTION OF TRAVEL [2.]
East Bound... 1 West Bound... 2 North Bound... 3
South Bound... 4

PROJECT STARTING POINT LOCATION

*13. MILEPOINT [_ _ _._ N]

*14. ELEVATION [_ _ 2 7 6]

*15. LATITUDE [3 4° 3 0' 0 0 . 0 0"]

*16. LONGITUDE [_ 8 9° 5 5' 0 0 . 0 0"]

17. ADDITIONAL LOCATION INFORMATION (SIGNIFICANT LANDMARKS): [Concrete Bridge Between Test Sect #1 And Sect #2 over Oil Creek]

18. HPMS SAMPLE NUMBER (HPMS ITEM 28) [_ _ _ _ _ _ _ _ _ _ _ _ N]

19. HPMS SECTION SUBDIVISION (HPMS ITEM 29) [N.]

PREPARER T. D. Dunnaway EMPLOYER BRE DATE 10-10-96

SPS-8 CONSTRUCTION DATA SHEET 2 GEOMETRIC, SHOULDER AND DRAINAGE INFORMATION	* STATE CODE [2 8] * SPS PROJECT CODE [0 8] * TEST SECTION NO. [0 1]

*1. LANE WIDTH (FEET) [1 2.]

2. MONITORING SITE LANE NUMBER [1.]
(LANE 1 IS OUTSIDE LANE, NEXT TO SHOULDER
LANE 2 IS NEXT TO LANE 1, ETC.)

*3. SUBSURFACE DRAINAGE LOCATION [3.]
Continuous Along Test Section... 1 Intermittent... 2 None... 3

*4. SUBSURFACE DRAINAGE TYPE [1.]
No Subsurface Drainage... 1 Longitudinal Drains... 2
Transverse Drains... 3 Drainage Blanket... 4 Well System... 5
Drainage Blanket with Longitudinal Drains... 6
Other (Specify)... 7 _____

SHOULDER DATA	INSIDE SHOULDER	OUTSIDE SHOULDER
*5. SURFACE TYPE Turf... 1 Granular.... 2 Asphalt Concrete... 3 Concrete... 4 Surface Treatment... 5 Other (Specify)... 6 _____	[__.]	[2.]
*6. TOTAL WIDTH (FEET)	[__ __.]	[1 0.]
*7. PAVED WIDTH (FEET)	[__ __.]	[__ 4.]
8. SHOULDER BASE TYPE (CODES-TABLE A.6)	[__ __.]	[2 6.]
9. SURFACE THICKNESS (INCHES)	[__ __. __]	[__ 2. 0]
10. SHOULDER BASE THICKNESS (INCHES)	[__ __. __]	[__ 4. 0]
11. DIAMETER OF LONGITUDINAL DRAINPIPES (INCHES)		[__. N]
12. SPACING OF LATERALS (FEET)		[__ __ N.]

PREPARER [signature] EMPLOYER BRE DATE 10-10-96

SPS-8 CONSTRUCTION DATA SHEET 3 REFERENCE PROJECT STATION TABLE	* STATE CODE [28] * SPS PROJECT CODE [08] * TEST SECTION NO. [01]

ORDER	*1 TEST SECTION ID NO	REFERENCE PROJECT STATION NUMBER		*4 CUT-FILL[1] TYPE
		*2 START	*3 END	
1	280801	0+00	5+00	2
2		+	+	
3		+	+	
4		+	+	
5		+	+	
6		+	+	
7		+	+	
8		+	+	
9		+	+	
10		+	+	
11		+	+	
12		+	+	
13		+	+	
14		+	+	
15		+	+	
16		+	+	
17		+	+	
18		+	+	
19		+	+	
20		+	+	

*5 INTERSECTIONS BETWEEN TEST SECTION ON THE PROJECT

ROUTE	PROJECT STATION NO.	RAMPS EXIT	RAMPS ENT	INTERSECTION STOP	INTERSECTION SIGNAL	INTERSECTION UNSIG
	+__					
	+__					
	+__					

Note 1. Indicate the type of subgrade construction the test section is located on:
Cut... 1 Fill... 2 At-Grade... 3 Cut, Fill, and At-Grade Combo... 4

If a section contains any combination of cut, fill and at-grade portions (code 4 above), enter the specific details of the cut, fill and at-grade locations on SPS-8 Construction Data Sheet 15.

PREPARER Roger W. Newman EMPLOYER BRE DATE 10-10-96

SPS-8 CONSTRUCTION DATA SHEET 4 LAYER DESCRIPTIONS	* STATE CODE [2 8] * SPS PROJECT CODE [0 8] * TEST SECTION NO. [0 1]

*1 LAYER NUMBER	*2 LAYER DESCRIPTION	*3 MATERIAL TYPE CLASS	*4 LAYER THICKNESSES (Inches)			
			AVERAGE	MINIMUM	MAXIMUM	STD. DEV.
1	SUBGRADE(7)	[5 9]				
2	[0 5]	[2 6]	[8.0]			
3	[0 4]	[2 8]	[2.0]			
4	[0 3]	[0 1]	[2.0]			
5	[ ]	[ ]	[ ]			
6	[ ]	[ ]	[ ]			
7	[ ]	[ ]	[ ]			
8	[ ]	[ ]	[ ]			
9	[ ]	[ ]	[ ]			
10	[ ]	[ ]	[ ]			
11	[ ]	[ ]	[ ]			
12	[ ]	[ ]	[ ]			
13	[ ]	[ ]	[ ]			
14	[ ]	[ ]	[ ]			
15	[ ]	[ ]	[ ]			

*5 DEPTH BELOW SURFACE TO "RIGID" LAYER (FEET) [.]
(Rock, Stone, Dense Shale)

NOTES:

1. Layer 1 is the subgrade soil, the highest numbered layer is the pavement surface.

2. Layer description codes:

Overlay.....01	Base Layer.....05	Porous Friction Course..09
Seal/Tack Coat.....02	Subbase Layer.....06	Surface Treatment.....10
Original Surface.....03	Subgrade.....07	Embankment (Fill).....11
HMAC Layer (Subsurface).04	Interlayer.....08	

3. The material type classification codes are presented in Tables A.5, A.6, A.7 and A.8 of the Data Collection Guide for Long Term Pavement Performance Studies, dated January 17, 1990.

4. Enter the average thickness of each layer and the minimum, maximum and standard deviation of the thickness measurements, if known.

PREPARER Lee W. Newman EMPLOYER BRE DATE 6-10-96

SPS-8 CONSTRUCTION DATA SHEET 5 PLANT-MIXED ASPHALT BOUND LAYERS AGGREGATE PROPERTIES	* STATE CODE [28] * SPS PROJECT CODE [093] * TEST SECTION NO. [01]

*1. LAYER NUMBER (FROM SHEET 4) [3] Binder

		TYPE	PERCENT
	COMPOSITION OF COARSE AGGREGATE		
*2.	Crushed Stone... 1 Gravel... 2 Crushed Gravel... 3	[3]	[100.]
*3.	Crushed Slag... 4 Manufactured Lightweight... 5	[__]	[___.]
*4.	Other (Specify)... 6 _____	[__]	[___.]
	COMPOSITION OF FINE AGGREGATE	TYPE	PERCENT
*5.	Natural Sand... 1	[1]	[38.] 10/26 = 38%
*6.	Crushed or Manufactured Sand (From Crushed Gravel or	[2]	[62.] 16/26 = 62%
*7.	Stone... 2 Recycled Concrete... 3 Other (Specify)... 4 _____	[__]	[___.]

*8. TYPE OF MINERAL FILLER [3]
Stone Dust... 1 Hydrated Lime... 2 Portland Cement... 3
Fly Ash... 4
Other (Specify)... 5 Combination of Ag Lime + Hyd Lime (5%) (1%)

BULK SPECIFIC GRAVITIES:

*9.	Coarse Aggregate (AASHTO T85 or ASTM C127)	[2.543]
*10.	Fine Aggregate (AASHTO T84 or ASTM C128)	[2.631]
*11.	Mineral Filler (AASHTO T100 or ASTM D854)	[2.561]
*12.	Aggregate Combination (Calculated)	[2.567]
13.	Effective Specific Gravity of Aggregate Combination (Calculated)	[2.597]

AGGREGATE DURABILITY TEST RESULTS
(SEE DURABILITY TEST TYPE CODES, TABLE A.13)

	TYPE OF AGGREGATE	TYPE OF TEST	RESULTS
14.	Coarse	[__ __]	[___.___]
15.	Coarse	[__ __]	[___.___]
16.	Coarse	[__ __]	[___.___]
17.	Coarse and Fine - Combined	[__ __]	[___.___]

18. POLISH VALUE OF COARSE AGGREGATES
SURFACE LAYER ONLY (AASHTO T279, ASTM D3319) __.__

PREPARER ~~Kevin W Brennan~~ EMPLOYER BRE DATE 12/2/96

SPS-8 CONSTRUCTION DATA SHEET 6 PLANT-MIXED ASPHALT BOUND LAYERS ASPHALT CEMENT PROPERTIES	* STATE CODE [2 8] * SPS PROJECT CODE [0 5] * TEST SECTION NO. [0 1]

*1. LAYER NUMBER (FROM SHEET 4) [3] Binder

*2. ASPHALT GRADE (SEE ASPHALT CODE SHEET, TABLE A.16) [0 5]
(IF OTHER, SPECIFY) _____

*3. SOURCE (SEE SUPPLY CODE SHEET, TABLE A.14) [7 7]
(IF OTHER, SPECIFY) Ergon (Memphis, TN)

4. SPECIFIC GRAVITY OF ASPHALT CEMENT [1.0 1 0]
(AASHTO T228)

GENERAL ASPHALT CEMENT PROPERTIES **(If available from supplier)**

5. VISCOSITY OF ASPHALT AT 140°F (POISES)
(AASHTO T202) [_ _ _ _ _ 4.]

6. VISCOSITY OF ASPHALT AT 275°F (CENTISTOKES)
(AASHTO T202) [_ _ _ _._ 4]

7. PENETRATION AT 77°F (AASHTO T49) (TENTHS OF A MM)
(100 g., 5 sec.) [_ _ _ 4.]

ASPHALT MODIFIERS (SEE TYPE CODE, A.15)

		TYPE	QUANTITY (%)
8.	MODIFIER #1	[_ 4]	[_ _.]
9.	MODIFIER #2 (IF OTHER, SPECIFY) _____	[_ _]	[_ _.]

10. DUCTILITY AT 77°F (CM)
(AASHTO T51) [_ _ 4.]

11. DUCTILITY AT 39.2°F (CM)
(AASHTO T51) [_ _ 4.]

12. TEST RATE FOR DUCTILITY MEASUREMENT
AT 39.2°f (CM/MIN) [_ _ 4.]

13. PENETRATION AT 39.2°F (AASHTO T49) (TENTHS OF A MM)
(200 g., 60 sec.) [_ _ 4.]

14. RING AND BALL SOFTENING POINT (AASHTO T53) (°F) [_ _ 4.]

NOTE: If emulsified or cutback asphalt was used, enter "N" in the spaces for "Original Asphalt Cement Properties".

PREPARER T. D. Duncan EMPLOYER BRE DATE 12/2/96

SPS-8 CONSTRUCTION DATA SHEET 7 PLANT-MIXED ASPHALT BOUND LAYERS MIXTURE PROPERTIES	* STATE CODE [2 8] * SPS PROJECT CODE [0 8] * TEST SECTION NO. [0 1]

*1. LAYER NUMBER (FROM SHEET 4) [3] Binder

*2. TYPE OF SAMPLES [1]
SAMPLES COMPACTED IN LABORATORY... 1
SAMPLES TAKEN FROM TEST SECTION... 2

*3. MAXIMUM SPECIFIC GRAVITY (NO AIR VOIDS) (AASHTO T209 OR ASTM D2041) [2.404]

BULK SPECIFIC GRAVITY (ASTM D1188)

*4. MEAN [2.275] NUMBER OF TESTS [6.]

5. MINIMUM [2.245] MAXIMUM [2.308]

6. STD. DEV. [0.021]

ASPHALT CONTENT (PERCENT WEIGHT OF TOTAL MIX) (AASHTO T164 OR ASTM D2172)

*7. MEAN [5.265] NUMBER OF SAMPLES [6.]

8. MINIMUM [5.000] MAXIMUM [5.520]

9. STD. DEV. [0.200]

PERCENT AIR VOIDS

*10. MEAN [4.950] NUMBER OF SAMPLES [6.]

11. MINIMUM [3.900] MAXIMUM [6.000]

12. STD. DEV. [0.802]

*13. VOIDS IN MINERAL AGGREGATE (PERCENT) [15.7]

*14. EFFECTIVE ASPHALT CONTENT (PERCENT) [4.8]

*15. MARSHALL STABILITY (LBS) (AASHTO T245 OR ASTM D1559) 2,[021.5]

*16. NUMBER OF BLOWS [75]

*17. MARSHALL FLOW (HUNDREDTHS OF AN INCH) (AASHTO T245 OR ASTM D1559) [____.]

*18. HVEEM STABILITY (AASHTO T246 OR ASTM D1561) [___.]

*19. HVEEM COHESIOMETER VALUE (GRAMS/25 MM OF WIDTH) (AASHTO T246 OR ASTM 1561) [____.]

PREPARER [signature] EMPLOYER BRE DATE 12-2-96

SPS-8 CONSTRUCTION DATA SHEET 5 PLANT-MIXED ASPHALT BOUND LAYERS AGGREGATE PROPERTIES	* STATE CODE [28] * SPS PROJECT CODE [C8] * TEST SECTION NO. [01]

*1. LAYER NUMBER (FROM SHEET 4) [4] Surface

		TYPE	PERCENT
	COMPOSITION OF COARSE AGGREGATE		
*2.	Crushed Stone... 1 Gravel... 2 Crushed Gravel... 3	[3]	[90.]
*3.	Crushed Slag... 4 Manufactured Lightweight... 5	[2]	[10.]
*4.	Other (Specify)... 6 #8 Stone	[ ]	[.]
	COMPOSITION OF FINE AGGREGATE	TYPE	PERCENT
*5.	Natural Sand... 1	[1]	[42.]
*6.	Crushed or Manufactured Sand (From Crushed Gravel or	[ ]	[.]
*7.	Stone... 2 Recycled Concrete... 3 Other (Specify)... 4 #10 Stone	[4]	[58.]

*8. TYPE OF MINERAL FILLER [5]
Stone Dust... 1 Hydrated Lime... 2 Portland Cement... 3
Fly Ash... 4
Other (Specify)... 5 Combination of Ag Lime (9%) + Hyd Lime (1%)

BULK SPECIFIC GRAVITIES:

*9.	Coarse Aggregate (AASHTO T85 or ASTM C127)	[2.541]
*10.	Fine Aggregate (AASHTO T84 or ASTM C128)	[2.629]
.1.	Mineral Filler (AASHTO T100 or ASTM D854)	[2.589]
*12.	Aggregate Combination (Calculated)	[2.584]
13.	Effective Specific Gravity of Aggregate Combination (Calculated)	[2.631]

AGGREGATE DURABILITY TEST RESULTS
(SEE DURABILITY TEST TYPE CODES, TABLE A.13)

	TYPE OF AGGREGATE	TYPE OF TEST	RESULTS
14.	Coarse	[ ]	[.]
15.	Coarse	[ ]	[.]
16.	Coarse	[ ]	[.]
17.	Coarse and Fine - Combined	[ ]	[.]

18. POLISH VALUE OF COARSE AGGREGATES
SURFACE LAYER ONLY (AASHTO T279, ASTM D3319) . .

PREPARER Lane W. Newman EMPLOYER BRE DATE 12/2/96

SPS-8 CONSTRUCTION DATA SHEET 6 PLANT-MIXED ASPHALT BOUND LAYERS ASPHALT CEMENT PROPERTIES	* STATE CODE [2 8] * SPS PROJECT CODE [0 8] * TEST SECTION NO. [0 1]

*1. LAYER NUMBER (FROM SHEET 4) [4] surface

*2. ASPHALT GRADE (SEE ASPHALT CODE SHEET, TABLE A.16) [0 5]
(IF OTHER, SPECIFY) _____

*3. SOURCE (SEE SUPPLY CODE SHEET, TABLE A.14) [7 7]
(IF OTHER, SPECIFY) Ergon (Memphis, TN)

4. SPECIFIC GRAVITY OF ASPHALT CEMENT [1.0 1 0]
(AASHTO T228)

GENERAL ASPHALT CEMENT PROPERTIES (If available from supplier)

5. VISCOSITY OF ASPHALT AT 140°F (POISES)
(AASHTO T202) [_ _ _ _ _ _.]

6. VISCOSITY OF ASPHALT AT 275°F (CENTISTOKES)
(AASHTO T202) [_ _ _ _._ _]

7. PENETRATION AT 77°F (AASHTO T49) (TENTHS OF A MM)
(100 g., 5 sec.) [_ _ _ _.]

ASPHALT MODIFIERS (SEE TYPE CODE, A.15)

		TYPE	QUANTITY (%)
8.	MODIFIER #1	[_ _]	[_ _.]
9.	MODIFIER #2 (IF OTHER, SPECIFY) _____	[_ _]	[_ _.]

10. DUCTILITY AT 77°F (CM)
(AASHTO T51) [_ _ _.]

11. DUCTILITY AT 39.2°F (CM)
(AASHTO T51) [_ _ _.]

12. TEST RATE FOR DUCTILITY MEASUREMENT
AT 39.2°f (CM/MIN) [_ _ _.]

13. PENETRATION AT 39.2°F (AASHTO T49) (TENTHS OF A MM)
(200 g., 60 sec.) [_ _ _.]

14. RING AND BALL SOFTENING POINT (AASHTO T53) (°F) [_ _ _.]

NOTE: If emulsified or cutback asphalt was used, enter "N" in the spaces for "Original Asphalt Cement Properties".

PREPARER [signature] EMPLOYER BRE DATE 12/2/96

SPS-8 CONSTRUCTION DATA SHEET 7 PLANT-MIXED ASPHALT BOUND LAYERS MIXTURE PROPERTIES	* STATE CODE [2 8] * SPS PROJECT CODE [0 8] * TEST SECTION NO. [0 1]

*1. LAYER NUMBER (FROM SHEET 4) [4] surface

*2. TYPE OF SAMPLES [1]
SAMPLES COMPACTED IN LABORATORY... 1
SAMPLES TAKEN FROM TEST SECTION... 2

*3. MAXIMUM SPECIFIC GRAVITY (NO AIR VOIDS) [2.396]
(AASHTO T209 OR ASTM D2041)

BULK SPECIFIC GRAVITY (ASTM D1188)

*4. MEAN [2.286] NUMBER OF TESTS [5.]

5. MINIMUM [2.281] MAXIMUM [2.293]

6. STD. DEV. [0.005]

ASPHALT CONTENT (PERCENT WEIGHT OF TOTAL MIX)
(AASHTO T164 OR ASTM D2172)

*7. MEAN [5.946] NUMBER OF SAMPLES [5.]

8. MINIMUM [5.900] MAXIMUM [6.010]

9. STD. DEV. [0.050]

PERCENT AIR VOIDS

*10. MEAN [4.340] NUMBER OF SAMPLES [5.]

11. MINIMUM [4.000] MAXIMUM [4.700]

12. STD. DEV. [0.288]

*13. VOIDS IN MINERAL AGGREGATE (PERCENT) [16.8]

*14. EFFECTIVE ASPHALT CONTENT (PERCENT) [5.6]

*15. MARSHALL STABILITY (LBS) (AASHTO T245 OR ASTM D1559) 2,[340.2]

*16. NUMBER OF BLOWS [__]

*17. MARSHALL FLOW (HUNDREDTHS OF AN INCH) [____.]
(AASHTO T245 OR ASTM D1559)

*18. HVEEM STABILITY (AASHTO T246 OR ASTM D1561) [___.]

*19. HVEEM COHESIOMETER VALUE (GRAMS/25 MM OF WIDTH) [____.]
(AASHTO T246 OR ASTM 1561)

PREPARER Lawrence D. Bennett EMPLOYER BRE DATE 12/13/96

SPS-8 CONSTRUCTION DATA SHEET 8 PLANT-MIXED ASPHALT BOUND LAYERS MIXTURE PROPERTIES (CONTINUED)	* STATE CODE [2 8] * SPS PROJECT CODE [0 8] * TEST SECTION NO. [0 1]

*1. LAYER NUMBER (FROM SHEET 4) [3]

*2. TYPE OF SAMPLES [2]
SAMPLES COMPACTED IN LABORATORY... 1
SAMPLES TAKEN FROM TEST SECTION... 2

*3. TYPE ASPHALT PLANT [3]

BATCH PLANT... 1 DRUM MIX PLANT... 2

OTHER (SPECIFY)... 3 Hybrid (Standard Haven + Barber Green)

*4. TYPE OF ANTISTRIPPING AGENT USED [__ N]
(SEE TYPE CODES, TABLE A.21)
OTHER (SPECIFY) NONE Used

*5. AMOUNT OF ANTISTRIPPING AGENT USED LIQUID OR SOLID CODE [N]

*6. (If liquid, enter code 1, and amount as percent of asphalt cement weight. If solid, enter code 2 and amount as percent of aggregate weight.) [__ __.N]

PREPARER Lane W. Dunham EMPLOYER BRE DATE 10-9-96

SPS-8 CONSTRUCTION DATA SHEET 8 PLANT-MIXED ASPHALT BOUND LAYERS MIXTURE PROPERTIES (CONTINUED)	* STATE CODE [2 8] * SPS PROJECT CODE [0 8] * TEST SECTION NO. [0 1]

*1. LAYER NUMBER (FROM SHEET 4) [4]

*2. TYPE OF SAMPLES [2]
SAMPLES COMPACTED IN LABORATORY... 1
SAMPLES TAKEN FROM TEST SECTION... 2

*3. TYPE ASPHALT PLANT [3]

BATCH PLANT... 1 DRUM MIX PLANT... 2

OTHER (SPECIFY)... 3 Hybrid (Standard Haven + Barber Green)

*4. TYPE OF ANTISTRIPPING AGENT USED [__ N]
(SEE TYPE CODES, TABLE A.21)
OTHER (SPECIFY) NONE Used

*5. AMOUNT OF ANTISTRIPPING AGENT USED LIQUID OR SOLID CODE [N]

*6. (If liquid, enter code 1, and amount as percent of asphalt cement weight. If solid, enter code 2 and amount as percent of aggregate weight.) [__ __.N]

PREPARER Lane W. Dunham EMPLOYER BRE DATE 10-9-96

SPS-8 CONSTRUCTION DATA SHEET 9 PLANT-MIXED ASPHALT BOUND LAYERS PLACEMENT DATA	* STATE CODE [2 8] * SPS PROJECT CODE [0 8] * TEST SECTION NO. [0 1]

*1. DATE PAVING OPERATIONS BEGAN (Month-Day-Year) [1 0-0 3-9 6]

*2. DATE PAVING OPERATIONS COMPLETED (Month-Day-Year) [1 0-0 4-9 6]

*3 ASPHALT CONCRETE PLANT AND HAUL

	Type	Name	Haul Distance (Mi)	Time (Min)	Layer Numbers
Plant 1	[3]	LehmAn Roberts	[4 0]	[3 5]	[3] [4] [ ]
Plant 2	[ ]		[ ]	[ ]	[ ] [ ] [ ]
Plant 3	[ ]		[ ]	[ ]	[ ] [ ] [ ]

Plant Type: Batch..... 1 Drum Mix.... 2 Other...3 Specify Hybrid

4. MANUFACTURER OF ASPHALT CONCRETE PAVER Blaw-Knox

5. MODEL DESIGNATION OF ASPHALT CONCRETE PAVER PF 510 AP 93-1

6. SINGLE PASS LAYDOWN WIDTH (Feet) [1 2.0]

7. AC BINDER COURSE LIFT
   Layer Number [0 3]
   Nominal First Lift Placement Thickness (Inches) [2.0]
   Nominal Second Lift Placement Thickness (Inches) [.]

8. AC SURFACE COURSE LIFT
   Layer Number [0 4]
   Nominal First Lift Placement Thickness (Inches) [2.0]
   Nominal Second Lift Placement Thickness (Inches) [.]

9. SURFACE FRICTION COURSE (If Placed)
   Layer Number [ ]
   Nominal Placement Thickness (Inches) N/A [.]

10. TEST SECTION STATION OF TRANSVERSE JOINTS (within test section)
    Binder Course [+]
    Surface Course NONE [+]
    Surface Friction Course [+]

11. LOCATION OF LONGITUDINAL SURFACE JOINT [1]
    Between lanes.. 1 Within lane.. 2
    (specify offset from O/S feet) [.]

12. SIGNIFICANT EVENTS DURING CONSTRUCTION (disruptions, rain, equip. problems, etc.) Soft spots in PGAB near 3+00
    Unevenness in Binder Layer

PREPARER Lane V. Woman EMPLOYER BRE DATE 10 - 9 - 96

SPS-8 CONSTRUCTION DATA SHEET 10 PLANT-MIXED ASPHALT BOUND LAYERS COMPACTION DATA	* STATE CODE [28] * SPS PROJECT CODE [08] * TEST SECTION NO. [01]

*1. DATE PAVING OPERATIONS BEGAN (Month-Day-Year) [10-03-96]
*2. DATE PAVING OPERATIONS COMPLETED (Month-Day-Year) [10-04-96]
*3. LAYER NUMBER [3]

*4. MIXING TEMPERATURE (°F) [310.]

5. LAYDOWN TEMPERATURES (°F)
Mean..... 300.
Minimum..... 290.
Standard Deviation... ___.__
Number of Tests ..... ___.
Maximum..... ___.

ROLLER DATA

	Roller Code #	Roller Description	Gross Wt (Tons)	Tire Press. (psi)	Frequency (Vibr./Min)	Amplitude (Inches)	Speed (mph)
6	A	Steel-Whl Tandem	10.0				
7	B	Steel-Whl Tandem	___.__				
8	C	Steel-Whl Tandem	___.__				
9	D	Steel-Whl Tandem	___.__				
10	E	Pneumatic-Tired	12.0	____.			
11	F	Pneumatic-Tired	___.__	____.			
12	G	Pneumatic-Tired	___.__	____.			
13	H	Pneumatic-Tired	___.__	____.			
14	I	Single-Drum Vibr.	___.__		____.	.___	___.__
15	J	Single-Drum Vibr.	___.__		____.	.___	___.__
16	K	Single-Drum Vibr.	___.__		____.	.___	___.__
17	L	Single-Drum Vibr.	___.__		____.	.___	___.__
18	M	Double-Drum Vibr.	___.__		____.	.___	___.__
19	N	Double-Drum Vibr.	___.__		____.	.___	___.__
20	O	Double-Drum Vibr.	___.__		____.	.___	___.__
21	P	Double-Drum Vibr.	___.__		____.	.___	___.__
22	Q	Other					

	COMPACTION DATA	First Lift	Second Lift	Third Lift	Fourth Lift
	BREAKDOWN				
23	Roller Code (A-Q)	A			
24	Coverages	4.	___.	___.	___.
	INTERMEDIATE				
25	Roller Code (A-Q)				
26	Coverages	___.	___.	___.	___.
	FINAL				
27	Roller Code (A-Q)	E			
28	Coverages	4.	___.	___.	___.
29	Air Temperature (°F)	70.	____.	____.	____.
30	Compacted Thickness (In)	2.0	___.__	___.__	___.__
31	Curing Period (Days)	___.__	___.__	___.__	___.__

PREPARER Lara W. Dunman EMPLOYER BRE DATE 10/09/96

SPS-8 CONSTRUCTION DATA SHEET 10 PLANT-MIXED ASPHALT BOUND LAYERS COMPACTION DATA	* STATE CODE [2 8] * SPS PROJECT CODE [0 4] * TEST SECTION NO. [0 1]

*1. DATE PAVING OPERATIONS BEGAN (Month-Day-Year) [1 0-0 3-9 6]
*2. DATE PAVING OPERATIONS COMPLETED (Month-Day-Year) [1 0-0 4-9 6]
*3. LAYER NUMBER [4]

*4. MIXING TEMPERATURE (°F) [3 1 0.]

5. LAYDOWN TEMPERATURES (°F)
Mean..... 3 0 0.
Minimum..... 2 9 0.
Standard Deviation... __ __.__
Number of Tests ..... __ __.
Maximum..... __ __ __.

ROLLER DATA

	Roller Code #	Roller Description	Gross Wt (Tons)	Tire Press. (psi)	Frequency (Vibr./Min)	Amplitude (Inches)	Speed (mph)
6	A	Steel-Whl Tandem	1 0.0				
7	B	Steel-Whl Tandem	__ __.__				
8	C	Steel-Whl Tandem	__ __.__				
9	D	Steel-Whl Tandem	__ __.__				
10	E	Pneumatic-Tired	1 2.0	__ __ __ __.			
11	F	Pneumatic-Tired	__ __.__	__ __ __ __.			
12	G	Pneumatic-Tired	__ __.__	__ __ __ __.			
13	H	Pneumatic-Tired	__ __.__	.			
14	I	Single-Drum Vibr.	__ __.__		__ __ __ __.	.__ __ __	__ __.__
15	J	Single-Drum Vibr.	__ __.__		__ __ __ __.	.__ __ __	__ __.__
16	K	Single-Drum Vibr.	__ __.__		__ __ __ __.	.__ __ __	__ __.__
17	L	Single-Drum Vibr.	__ __.__		__ __ __ __.	.__ __ __	__ __.__
18	M	Double-Drum Vibr.	__ __.__		__ __ __ __.	.__ __ __	__ __.__
19	N	Double-Drum Vibr.	__ __.__		__ __ __ __.	.__ __ __	__ __.__
20	O	Double-Drum Vibr.	__ __.__		__ __ __ __.	.__ __ __	__ __.__
21	P	Double-Drum Vibr.	__ __.__		__ __ __ __.	.__ __ __	__ __.__
22	Q	Other					

	COMPACTION DATA	First Lift	Second Lift	Third Lift	Fourth Lift
	BREAKDOWN				
23	Roller Code (A-Q)	A	__	__	__
24	Coverages	__ 4.	__ __.	__ __.	__ __.
	INTERMEDIATE				
25	Roller Code (A-Q)	__	__	__	__
26	Coverages	__ __.	__ __.	__ __.	__ __.
	FINAL				
27	Roller Code (A-Q)	E	__	__	__
28	Coverages	__ 4.	__ __.	__ __.	__ __.
29	Air Temperature (°F)	__ 7 0.	__ __ __.	__ __ __.	__ __ __.
30	Compacted Thickness (In)	2.0	__.__	__.__	__.__
31	Curing Period (Days)	__ __.__	__ __.__	__ __.__	__ __.__

PREPARER Lara W. Dunn EMPLOYER BRE DATE 10/09/96

SPS-8 CONSTRUCTION DATA SHEET 11 PLANT-MIXED ASPHALT BOUND LAYERS DENSITY AND PROFILE DATA	* STATE CODE [28] * SPS PROJECT CODE [08] * TEST SECTION NO. [01]

1. NUCLEAR DENSITY MEASUREMENTS

LAYER TYPE	Binder Course	Surface Course	Surface Friction Layer
Measurement Method (A, B, C)[1]	A	A	N/A
Number of Measurement	12	12	
Average (pcf)	131.7	136.0	
Maximum (pcf)	134.9	140.9	
Minimum (pcf)	128.7	132.6	
Standard Deviation (pcf)	2.0	2.5	
Layer Number	03	04	

[1] Measurement Method (Backscatter... A) Direct Transmission... B Air Gap... C

2. MANUFACTURER OF NUCLEAR DENSITY GAUGE TROXLER (For Encoded)

3. NUCLEAR DENSITY GAUGE MODEL NUMBER 3440 (For Encoded)

4. NUCLEAR DENSITY GAUGE IDENTIFICATION NUMBER

5. NUCLEAR GAUGE COUNT RATE FOR STANDARDIZATION

6. PROFILOGRAPH MEASUREMENTS

Profilograph Type California... 1 Rainhart... 2 Ames.... 3	3
Profile Index (Inches/Mile)	07
Interpretation Method Manual.. 1 Mechanical.. 2 Computer.. 3	1
Height of Blanking Band (Inches)	0.02
Cutoff Height (Inches)	0.05

7. SURFACE PROFILE USED AS BASIS OF INCENTIVE PAYMENT? (YES, NO) No

PREPARER Lane W. Wurman EMPLOYER BRE DATE 10/24/96

SPS-8 CONSTRUCTION DATA SHEET 12 LAYER THICKNESS MEASUREMENTS	* STATE CODE [2 8] * SPS PROJECT CODE [0 8] * TEST SECTION NO. [0 1]

SHEET ____ OF ____

STATION NUMBER	OFFSET (Inches)	LAYER THICKNESS MEASUREMENTS (Inches)			
		DENSE GRADED AGGREGATE BASE	PORTLAND CEMENT CONCRETE SURFACE	ASPHALT SURFACE AND BINDER	SURFACE FRICTION LAYER
0+00	0 36 72 108 144				
0+50	0 36 72 108 144				
1+00	0 36 72 108 144				
1+50	0 36 72 108 144				
2+00	0 36 72 108 144				
2+50	0 36 72 108 144				
3+00	0 36 72 108 144				
LAYER NUMBER		02		03	

PREPARER Lee W. Dana EMPLOYER BRE DATE 11/01/96

SPS-8 CONSTRUCTION DATA SHEET 12 LAYER THICKNESS MEASUREMENTS	* STATE CODE [2 8] * SPS PROJECT CODE [0 8] * TEST SECTION NO. [0 1]

SHEET ____ OF ____

STATION NUMBER	OFFSET (Inches)	LAYER THICKNESS MEASUREMENTS (Inches)			
		DENSE GRADED AGGREGATE BASE	PORTLAND CEMENT CONCRETE SURFACE	ASPHALT SURFACE AND BINDER	SURFACE FRICTION LAYER
3+50	0 36 72 108 144				
4+00	0 36 72 108 144				
4+50	0 36 72 108 144				
5+00	0 36 72 108 144				
—+— —					
—+— —					
—+— —					
LAYER NUMBER		02		03	

PREPARER Lara N. Numa EMPLOYER BRE DATE 11/01/96

SPS-8 CONSTRUCTION DATA SHEET 13 UNBOUND AGGREGATE BASE MATERIAL PLACEMENT	* STATE CODE [2 8] * SPS PROJECT CODE [0 8] * TEST SECTION NO. [0 1]

*1. UNBOUND BASE MATERIAL PLACEMENT BEGAN (Month-Day-Year) [__ __-__ __-__ __]

*2. UNBOUND BASE MATERIAL PLACEMENT COMPLETED (Month-Day-Year) [1 0-0 2-9 6]

*3. LAYER NUMBER (From Sheet 4) [2]

PRIMARY COMPACTION EQUIPMENT

*4. CODE TYPE [2]

COMPACTION TYPE CODES
Pneumatic - Tired... 1 Steel Wheel Tandem... 2 Single Drum Vibr.... 3
Double Drum Vibr.... 4
Other (Specify)... 5 _____

*5. GROSS WEIGHT (TONS) [1 0.0]

*6. LIFT THICKNESSES
Nominal First Lift Placement Thickness (inches) [0 8]
Nominal Second Lift Placement Thickness (inches) [__ __]
Nominal Third Lift Placement Thickness (inches) [__ __]
Nominal Fourth Lift Placement Thickness (inches) [__ __]

DENSITY DATA IS RECORDED ON SAMPLING DATA SHEET 8-1

7. SIGNIFICANT EVENTS DURING CONSTRUCTION (DISRUPTIONS, RAIN, EQUIPMENT PROBLEMS, ETC.)
There were soft spots in the BAse that had to be fixed, After the Binder was placed, There still seemed to be Some unevenss @ Sta 3+00 - 5+00

PREPARER [signature] EMPLOYER BRE DATE 11-1-96

SPS-8 CONSTRUCTION DATA SHEET 14 SUBGRADE PREPARATION	* STATE CODE [2 8] * SPS PROJECT CODE [0 8] * TEST SECTION NO. [0 1]

*1. SUBGRADE PREPARATION BEGAN (Month-Day-Year) [8-15-96]

*2. SUBGRADE PREPARATION COMPLETED (Month-Day-Year) [8-20-96]

PRIMARY COMPACTION EQUIPMENT

*3. CODE TYPE [2]

COMPACTION EQUIPMENT TYPE CODES
Sheepsfoot... 1 Pneumatic Tired... 2 Steel Wheel Tandem... 3
Single Drum Vibr.... 4 Double Drum Vibr.... 5
Other (Specify)... 6 _____

*4. GROSS WEIGHT (TONS) [10.0]

		TYPE	PERCENT
*5.	STABILIZING AGENT 1	[N]	[.]
*6.	STABILIZING AGENT 2	[N]	[.]

STABILIZING AGENT TYPE CODES
Portland Cement... 1 Lime... 2 Fly Ash, Class C... 3
Fly Ash, Class N... 4
Other (Specify)... 5 _____

*7. TYPICAL LIFT THICKNESS (INCHES) [8]
(For Fill Sections Only)

DENSITY DATA IS RECORDED ON SAMPLING DATA SHEET 8-1

8. SIGNIFICANT EVENTS DURING CONSTRUCTION (DISRUPTIONS, RAIN, EQUIPMENT PROBLEMS, ETC.) Intermittent Rain slowed const of subgrade

PREPARER [signature] EMPLOYER FHWA DATE _____

SPS-8 CONSTRUCTION DATA SHEET 15 CUT-FILL SECTION LOCATIONS	* STATE CODE [2 8] * SPS PROJECT CODE [0 8] * TEST SECTION NO. [0 1]

ORDER	*1 CUT-FILL TYPE[1]	TEST SECTION STATION NUMBER	
		*2 START	*3 END
1	2	0 + 0 0	5 + 0 0
2		+	+
3		+	+
4		+	+
5		+	+
6		+	+
7		+	+
8		+	+
9		+	+
10		+	+

NOTES:

1. Indicate the type of subgrade construction with one of the following:

   Cut... 1 Fill... 2 At-Grade... 3

2. Use one line for each cut, fill or at-grade zone present within the section boundaries.

PREPARER L. W. Duncan EMPLOYER BRE DATE 1-10-96

SPS-8 CONSTRUCTION DATA SHEET 16 SUBGRADE EXCAVATION AND BACKFILLING SKETCH	* STATE CODE [2 8] * SPS PROJECT CODE [0 5] * TEST SECTION NO. [0 1]

PREPARED [signature] EMPLOYER BRE DATE 10-10-96

SPS-8 CONSTRUCTION DATA SHEET 28 MISCELLANEOUS CONSTRUCTION NOTES AND COMMENTS	* STATE CODE [2 8] * SPS PROJECT CODE [0 8] * TEST SECTION NO. [0 1]

Provide any miscellaneous comments and notes concerning construction operations which may have an influence on the ultimate performance of the test sections or which may cause undesired performance differences to occur between test sections. Also include any quality control measurements or data for which space is not provided on other forms. Provide an indication of the basis for such measurements, such as an ASTM, AASHTO, or Agency standard test designation.

ON The EAst side of the bridge (sect. #1) (@ 3+00 – 5+00) There were Soft spots in the base. After Laying the Binder LAyeR, I Noticed some UNeveness where the soft spots were initially.

PREPARER [signature] EMPLOYER BRE DATE 10/09/96

SPS-8 CONSTRUCTION DATA SHEET 1 PROJECT IDENTIFICATION	* STATE CODE [2 8] * SPS PROJECT CODE [2 5] * TEST SECTION NO. [0 2]

*1.	DATE OF DATA COLLECTION OR UPDATE (Month/Year)	[1 0/9 6]
*2.	STATE HIGHWAY AGENCY (SHA) DISTRICT NUMBER	[0 2.]
*3.	COUNTY OR PARISH	[1 0 7.]
4.	FUNCTIONAL CLASS (SEE TABLE A.2, APPENDIX A)	[2 9.]
*5.	ROUTE SIGNING (NUMERIC CODE) Interstate... 1 U.S.... 2 State... 3 Other... 4	[3.]
*6.	ROUTE NUMBER	[3 1 5.]
7.	TYPE OF PAVEMENT (01 for Granular Base, 02 for Treated Base)	[0 1.]
8.	NUMBER OF THROUGH LANES (ONE DIRECTION)	[1.]
*9.	DATE OF CONSTRUCTION COMPLETION (Month/Year)	[1 0/9 6]
*10.	DATE OPENED TO TRAFFIC (Month/Year)	[1 1/9 6]
11.	CONSTRUCTION COSTS PER LANE MILE (In $1000)	[.]
12.	DIRECTION OF TRAVEL East Bound... 1 West Bound... 2 North Bound... 3 South Bound... 4	[2.]
	PROJECT STARTING POINT LOCATION	
*13.	MILEPOINT	[. N]
*14.	ELEVATION	[2 8 5]
*15.	LATITUDE	[3 4° 3 0' 0 0 . 0 0"]
*16.	LONGITUDE	[8 9° 5 5' 0 0 . 0 0"]
17.	ADDITIONAL LOCATION INFORMATION (SIGNIFICANT LANDMARKS): [Concrete Bridge Between Test Section #1 + Test Section #2 over Oil Creek]	
18.	HPMS SAMPLE NUMBER (HPMS ITEM 28)	[N]
19.	HPMS SECTION SUBDIVISION (HPMS ITEM 29)	[N.]

PREPARER Lane W. Dunham EMPLOYER BRE DATE 10-10-96

SPS-8 CONSTRUCTION DATA SHEET 2 GEOMETRIC, SHOULDER AND DRAINAGE INFORMATION	* STATE CODE [2 8] * SPS PROJECT CODE [0 8] * TEST SECTION NO. [0 2]

*1. LANE WIDTH (FEET) [1 2.]

2. MONITORING SITE LANE NUMBER [1.]
(LANE 1 IS OUTSIDE LANE, NEXT TO SHOULDER
LANE 2 IS NEXT TO LANE 1, ETC.)

*3. SUBSURFACE DRAINAGE LOCATION [3.]
Continuous Along Test Section... 1 Intermittent... 2 None... 3

*4. SUBSURFACE DRAINAGE TYPE [1.]
No Subsurface Drainage... 1 Longitudinal Drains... 2
Transverse Drains... 3 Drainage Blanket... 4 Well System... 5
Drainage Blanket with Longitudinal Drains... 6
Other (Specify)... 7 _____

	SHOULDER DATA	INSIDE SHOULDER	OUTSIDE SHOULDER
*5.	SURFACE TYPE Turf... 1 Granular.... 2 Asphalt Concrete... 3 Concrete... 4 Surface Treatment... 5 Other (Specify)... 6 _____	[N.]	[2.]
*6.	TOTAL WIDTH (FEET)	[__ __.]	[1 0.]
*7.	PAVED WIDTH (FEET)	[__ __.]	[__ 4.]
8.	SHOULDER BASE TYPE (CODES-TABLE A.6)	[__ __.]	[2 6.]
9.	SURFACE THICKNESS (INCHES)	[__ __. __]	[__ 2. 0]
10.	SHOULDER BASE THICKNESS (INCHES)	[__ __. __]	[__ 8. 0]
11.	DIAMETER OF LONGITUDINAL DRAINPIPES (INCHES)		[__. N]
2.	SPACING OF LATERALS (FEET)		[__ __ N.]

PREPARER Lane A. Swenson EMPLOYER BRE DATE 10-10-96

SPS-8 CONSTRUCTION DATA SHEET 3 REFERENCE PROJECT STATION TABLE	* STATE CODE [2 8] * SPS PROJECT CODE [0 8] * TEST SECTION NO. [0 2]

ORDER	*1 TEST SECTION ID NO	REFERENCE PROJECT STATION NUMBER		*4 CUT-FILL[1] TYPE
		*2 START	*3 END	
1	2 8 0 8 0 2	0 + 0 0	5 + 0 0	2
2		+	+	
3		+	+	
4		+	+	
5		+	+	
6		+	+	
7		+	+	
8		+	+	
9		+	+	
10		+	+	
11		+	+	
12		+	+	
13		+	+	
14		+	+	
15		+	+	
16		+	+	
17		+	+	
18		+	+	
19		+	+	
20		+	+	

*5 INTERSECTIONS BETWEEN TEST SECTION ON THE PROJECT

ROUTE	PROJECT STATION NO.	RAMPS EXIT	RAMPS ENT	INTERSECTION STOP	INTERSECTION SIGNAL	INTERSECTION UNSIG
	+					
	+					
	+					

Note 1. Indicate the type of subgrade construction the test section is located on:
Cut... 1 Fill... 2 At-Grade... 3 Cut, Fill, and At-Grade Combo... 4

If a section contains any combination of cut, fill and at-grade portions (code 4 above), enter the specific details of the cut, fill and at-grade locations on SPS-8 Construction Data Sheet 15.

PREPARER Lore W. Dunn EMPLOYER BRE DATE 10-10-96

SPS-8 CONSTRUCTION DATA SHEET 4 LAYER DESCRIPTIONS	* STATE CODE [25] * SPS PROJECT CODE [08] * TEST SECTION NO. [01]

*1 LAYER NUMBER	*2 LAYER DESCRIPTION	*3 MATERIAL TYPE CLASS	*4 LAYER THICKNESSES (Inches)			
			AVERAGE	MINIMUM	MAXIMUM	STD. DEV.
1	SUBGRADE(7)	[59]				
2 (DGAC)	[05]	[26]	[12.0]			
3	[04]	[28]	[5.0]			
4	[03]	[01]	[2.0]			
5	[ ]	[ ]	[ ]			
6	[ ]	[ ]	[ ]			
7	[ ]	[ ]	[ ]			
8	[ ]	[ ]	[ ]			
9	[ ]	[ ]	[ ]			
10	[ ]	[ ]	[ ]			
11	[ ]	[ ]	[ ]			
12	[ ]	[ ]	[ ]			
13	[ ]	[ ]	[ ]			
14	[ ]	[ ]	[ ]			
15	[ ]	[ ]	[ ]			

*5 DEPTH BELOW SURFACE TO "RIGID" LAYER (FEET) (Rock, Stone, Dense Shale) [.]

NOTES:

1. Layer 1 is the subgrade soil, the highest numbered layer is the pavement surface.

2. Layer description codes:

Overlay.....01	Base Layer.....05	Porous Friction Course..09
Seal/Tack Coat.....02	Subbase Layer.....06	Surface Treatment.....10
Original Surface.....03	Subgrade.....07	Embankment (Fill).....11
HMAC Layer (Subsurface).04	Interlayer.....08	

3. The material type classification codes are presented in Tables A.5, A.6, A.7 and A.8 of the Data Collection Guide for Long Term Pavement Performance Studies, dated January 17, 1990.

4. Enter the average thickness of each layer and the minimum, maximum and standard deviation of the thickness measurements, if known.

PREPARER [signature] EMPLOYER BRE DATE 10-10-96

SPS-8 CONSTRUCTION DATA SHEET 5 PLANT-MIXED ASPHALT BOUND LAYERS AGGREGATE PROPERTIES	* STATE CODE [2 8] * SPS PROJECT CODE [0 8] * TEST SECTION NO. [0 2]

*1. LAYER NUMBER (FROM SHEET 4) [3] Binder

		TYPE	PERCENT
	COMPOSITION OF COARSE AGGREGATE		
*2.	Crushed Stone... 1 Gravel... 2 Crushed Gravel... 3	[3]	[1 0 0.]
*3.	Crushed Slag... 4 Manufactured Lightweight... 5	[__]	[__ __ __.]
*4.	Other (Specify)... 6 _____	[__]	[__ __ __.]
	COMPOSITION OF FINE AGGREGATE	TYPE	PERCENT
*5.	Natural Sand... 1	[1]	[__ 3 8.]
*6.	Crushed or Manufactured Sand (From Crushed Gravel or	[2]	[__ 6 2.]
*7.	Stone... 2 Recycled Concrete... 3 Other (Specify)... 4 _____	[__]	[__ __ __.]

*8. TYPE OF MINERAL FILLER [3]
Stone Dust... 1 Hydrated Lime... 2 Portland Cement... 3
Fly Ash... 4
Other (Specify)... 5 Combination of Ag Lime (5%) + Hyd Lime (1%) 5

BULK SPECIFIC GRAVITIES:

*9.	Coarse Aggregate (AASHTO T85 or ASTM C127)	[2.5 4 3]
*10.	Fine Aggregate (AASHTO T84 or ASTM C128)	[2.6 3 1]
11.	Mineral Filler (AASHTO T100 or ASTM D854)	[2.5 6 1]
*12.	Aggregate Combination (Calculated)	[2.5 6 7]
13.	Effective Specific Gravity of Aggregate Combination (Calculated)	[2.5 9 7]

AGGREGATE DURABILITY TEST RESULTS
(SEE DURABILITY TEST TYPE CODES, TABLE A.13)

	TYPE OF AGGREGATE	TYPE OF TEST	RESULTS
14.	Coarse	[__ __]	[__ __ __.__ __ __]
15.	Coarse	[__ __]	[__ __ __.__ __ __]
16.	Coarse	[__ __]	[__ __ __.__ __ __]
17.	Coarse and Fine - Combined	[__ __]	[__ __ __.__ __ __]

18. POLISH VALUE OF COARSE AGGREGATES
SURFACE LAYER ONLY (AASHTO T279, ASTM D3319) __ __.

PREPARER Lore A. Wenman EMPLOYER BRE DATE 12/2/96

SPS-8 CONSTRUCTION DATA SHEET 6 PLANT-MIXED ASPHALT BOUND LAYERS ASPHALT CEMENT PROPERTIES	* STATE CODE [2 8] * SPS PROJECT CODE [0 8] * TEST SECTION NO. [0 2]

*1. LAYER NUMBER (FROM SHEET 4) [3] Binder

*2. ASPHALT GRADE (SEE ASPHALT CODE SHEET, TABLE A.16) [0 5]
(IF OTHER, SPECIFY) _____

*3. SOURCE (SEE SUPPLY CODE SHEET, TABLE A.14) [7 2]
(IF OTHER, SPECIFY) ERGON (Memphis, TN)

4. SPECIFIC GRAVITY OF ASPHALT CEMENT [1.0 1 0]
(AASHTO T228)

GENERAL ASPHALT CEMENT PROPERTIES (If available from supplier)

5. VISCOSITY OF ASPHALT AT 140°F (POISES)
(AASHTO T202) [_ _ _ _ _ U.]

6. VISCOSITY OF ASPHALT AT 275°F (CENTISTOKES)
(AASHTO T202) [_ _ _ _._ U]

7. PENETRATION AT 77°F (AASHTO T49) (TENTHS OF A MM)
(100 g., 5 sec.) [_ _ _ U.]

ASPHALT MODIFIERS (SEE TYPE CODE, A.15)

		TYPE	QUANTITY (%)
8.	MODIFIER #1	[_ U]	[_ _.]
9.	MODIFIER #2 (IF OTHER, SPECIFY) _____	[_ _]	[_ _.]

10. DUCTILITY AT 77°F (CM) [_ _ U.]
(AASHTO T51)

11. DUCTILITY AT 39.2°F (CM) [_ _ U.]
(AASHTO T51)

12. TEST RATE FOR DUCTILITY MEASUREMENT [_ _ 4.]
AT 39.2°f (CM/MIN)

13. PENETRATION AT 39.2°F (AASHTO T49) (TENTHS OF A MM) [_ _ 4.]
(200 g., 60 sec.)

14. RING AND BALL SOFTENING POINT (AASHTO T53) (°F) [_ _ 4.]

NOTE: If emulsified or cutback asphalt was used, enter "N" in the spaces for "Original Asphalt Cement Properties".

PREPARER Lois D. Brenner EMPLOYER BRE DATE 12/2/96

SPS-8 CONSTRUCTION DATA SHEET 7 PLANT-MIXED ASPHALT BOUND LAYERS MIXTURE PROPERTIES	* STATE CODE [2 8] * SPS PROJECT CODE [0 8] * TEST SECTION NO. [0 2]

*1. LAYER NUMBER (FROM SHEET 4) [3] Binder

*2. TYPE OF SAMPLES [1]
SAMPLES COMPACTED IN LABORATORY... 1
SAMPLES TAKEN FROM TEST SECTION... 2

*3. MAXIMUM SPECIFIC GRAVITY (NO AIR VOIDS) (AASHTO T209 OR ASTM D2041) [2.404]

BULK SPECIFIC GRAVITY (ASTM D1188)

*4. MEAN [2.275] NUMBER OF TESTS [6.]

5. MINIMUM [2.245] MAXIMUM [2.308]

6. STD. DEV. [0.021]

ASPHALT CONTENT (PERCENT WEIGHT OF TOTAL MIX) (AASHTO T164 OR ASTM D2172)

*7. MEAN [5.265] NUMBER OF SAMPLES [6.]

8. MINIMUM [5.000] MAXIMUM [5.520]

9. STD. DEV. [0.200]

PERCENT AIR VOIDS

*10. MEAN [4.950] NUMBER OF SAMPLES [6.]

11. MINIMUM [3.900] MAXIMUM [6.000]

12. STD. DEV. [0.802]

*13. VOIDS IN MINERAL AGGREGATE (PERCENT) [15.7]

*14. EFFECTIVE ASPHALT CONTENT (PERCENT) [4.8]

*15. MARSHALL STABILITY (LBS) (AASHTO T245 OR ASTM D1559) 2,[021.5]

*16. NUMBER OF BLOWS [75]

*17. MARSHALL FLOW (HUNDREDTHS OF AN INCH) (AASHTO T245 OR ASTM D1559) [N.]

*18. HVEEM STABILITY (AASHTO T246 OR ASTM D1561) [N.]

*19. HVEEM COHESIOMETER VALUE (GRAMS/25 MM OF WIDTH) (AASHTO T246 OR ASTM 1561) [N.]

PREPARER Lisa D. Duncan EMPLOYER BRE DATE 12/2/96

SPS-8 CONSTRUCTION DATA SHEET 5 PLANT-MIXED ASPHALT BOUND LAYERS AGGREGATE PROPERTIES	* STATE CODE [2 8] * SPS PROJECT CODE [0 8] * TEST SECTION NO. [0 2]

*1. LAYER NUMBER (FROM SHEET 4) [5] surface

	COMPOSITION OF COARSE AGGREGATE	TYPE	PERCENT
*2.	Crushed Stone... 1 Gravel... 2 Crushed Gravel... 3	[3]	[90.]
*3.	Crushed Slag... 4 Manufactured Lightweight... 5	[2]	[10.]
*4.	Other (Specify)... 6 #8 Stone	[X]	[X.]
	COMPOSITION OF FINE AGGREGATE	TYPE	PERCENT
*5.	Natural Sand... 1	[1]	[42.]
*6.	Crushed or Manufactured Sand (From Crushed Gravel or	[ ]	[.]
*7.	Stone... 2 Recycled Concrete... 3 Other (Specify)... 4 #10 Stone	[4]	[58.]

*8. TYPE OF MINERAL FILLER [5]
Stone Dust... 1 Hydrated Lime:.. 2 Portland Cement... 3
Fly Ash... 4
Other (Specify)... 5 Combination of Ag Lime (9%) + Hyd Lime (1%)

BULK SPECIFIC GRAVITIES:

*9.	Coarse Aggregate (AASHTO T85 or ASTM C127)	[2.541]
*10.	Fine Aggregate (AASHTO T84 or ASTM C128)	[2.629]
11.	Mineral Filler (AASHTO T100 or ASTM D854)	[2.589]
*12.	Aggregate Combination (Calculated)	[2.584]
13.	Effective Specific Gravity of Aggregate Combination (Calculated)	[2.631]

AGGREGATE DURABILITY TEST RESULTS
(SEE DURABILITY TEST TYPE CODES, TABLE A.13)

	TYPE OF AGGREGATE	TYPE OF TEST	RESULTS
14.	Coarse	[ ]	[.]
15.	Coarse	[ ]	[.]
16.	Coarse	[ ]	[.]
17.	Coarse and Fine - Combined	[ ]	[.]

18. POLISH VALUE OF COARSE AGGREGATES
SURFACE LAYER ONLY (AASHTO T279, ASTM D3319) . .

PREPARER Ron A. Duncan EMPLOYER BRE DATE 12/2/96

SPS-8 CONSTRUCTION DATA SHEET 6 PLANT-MIXED ASPHALT BOUND LAYERS ASPHALT CEMENT PROPERTIES	* STATE CODE [2 8] * SPS PROJECT CODE [0 8] * TEST SECTION NO. [0 2]

*1. LAYER NUMBER (FROM SHEET 4) [4] Surface

*2. ASPHALT GRADE (SEE ASPHALT CODE SHEET, TABLE A.16) [0 5]
(IF OTHER, SPECIFY) _____

*3. SOURCE (SEE SUPPLY CODE SHEET, TABLE A.14) [7 7]
(IF OTHER, SPECIFY) ERGON (Memphis, TN)

4. SPECIFIC GRAVITY OF ASPHALT CEMENT [1.0 1 0]
(AASHTO T228)

GENERAL ASPHALT CEMENT PROPERTIES (If available from supplier)

5. VISCOSITY OF ASPHALT AT 140°F (POISES)
(AASHTO T202) [_ _ _ _ _ 4.]

6. VISCOSITY OF ASPHALT AT 275°F (CENTISTOKES)
(AASHTO T202) [_ _ _ _._ 4]

7. PENETRATION AT 77°F (AASHTO T49) (TENTHS OF A MM)
(100 g., 5 sec.) [_ _ _ 4.]

ASPHALT MODIFIERS (SEE TYPE CODE, A.15)

	TYPE	QUANTITY (%)
8. MODIFIER #1	[_ 4]	[_ _.]
MODIFIER #2 (IF OTHER, SPECIFY) _____	[_ _]	[_ _.]

10. DUCTILITY AT 77°F (CM)
(AASHTO T51) [_ _ 4.]

11. DUCTILITY AT 39.2°F (CM)
(AASHTO T51) [_ _ 4.]

12. TEST RATE FOR DUCTILITY MEASUREMENT
AT 39.2°f (CM/MIN) [_ _ 4.]

13. PENETRATION AT 39.2°F (AASHTO T49) (TENTHS OF A MM)
(200 g., 60 sec.) [_ _ 4.]

14. RING AND BALL SOFTENING POINT (AASHTO T53) (°F) [_ _ 4.]

NOTE: If emulsified or cutback asphalt was used, enter "N" in the spaces for "Original Asphalt Cement Properties".

PREPARER [signature] EMPLOYER BRE DATE 12/2/96

SPS-8 CONSTRUCTION DATA SHEET 7 PLANT-MIXED ASPHALT BOUND LAYERS MIXTURE PROPERTIES	* STATE CODE [2 8] * SPS PROJECT CODE [0 8] * TEST SECTION NO. [0 2]

*1. LAYER NUMBER (FROM SHEET 4) [4] Surface

*2. TYPE OF SAMPLES [1]
SAMPLES COMPACTED IN LABORATORY... 1
SAMPLES TAKEN FROM TEST SECTION... 2

*3. MAXIMUM SPECIFIC GRAVITY (NO AIR VOIDS) (AASHTO T209 OR ASTM D2041) [2.396]

BULK SPECIFIC GRAVITY (ASTM D1188)

*4. MEAN [2.286] NUMBER OF TESTS [5.]

5. MINIMUM [2.281] MAXIMUM [2.293]

6. STD. DEV. [0.005]

ASPHALT CONTENT (PERCENT WEIGHT OF TOTAL MIX) (AASHTO T164 OR ASTM D2172)

*7. MEAN [5.946] NUMBER OF SAMPLES [5.]

8. MINIMUM [5.900] MAXIMUM [6.010]

9. STD. DEV. [0.050]

PERCENT AIR VOIDS

*10. MEAN [4.340] NUMBER OF SAMPLES [5.]

11. MINIMUM [4.000] MAXIMUM [4.700]

12. STD. DEV. [0.288]

*13. VOIDS IN MINERAL AGGREGATE (PERCENT) [16.8]

*14. EFFECTIVE ASPHALT CONTENT (PERCENT) [5.6]

*15. MARSHALL STABILITY (LBS) (AASHTO T245 OR ASTM D1559) ?[340.2]

*16. NUMBER OF BLOWS [__]

*17. MARSHALL FLOW (HUNDREDTHS OF AN INCH) (AASHTO T245 OR ASTM D1559) [____.]

*18. HVEEM STABILITY (AASHTO T246 OR ASTM D1561) [___.]

*19. HVEEM COHESIOMETER VALUE (GRAMS/25 MM OF WIDTH) (AASHTO T246 OR ASTM 1561) [____.]

PREPARER Lana W. Dunn EMPLOYER BRE DATE 12/3/96

SPS-8 CONSTRUCTION DATA SHEET 8 PLANT-MIXED ASPHALT BOUND LAYERS MIXTURE PROPERTIES (CONTINUED)	* STATE CODE [2 8] * SPS PROJECT CODE [0 8] * TEST SECTION NO. [0 2]

*1. LAYER NUMBER (FROM SHEET 4) [3]

*2. TYPE OF SAMPLES [2]
SAMPLES COMPACTED IN LABORATORY... 1
SAMPLES TAKEN FROM TEST SECTION... 2

*3. TYPE ASPHALT PLANT [3]

BATCH PLANT... 1 DRUM MIX PLANT... 2

OTHER (SPECIFY)... 3 Hybrid (Standard Haven + Barber Green)

*4. TYPE OF ANTISTRIPPING AGENT USED [N]
(SEE TYPE CODES, TABLE A.21)
OTHER (SPECIFY) None Used

*5. AMOUNT OF ANTISTRIPPING AGENT USED LIQUID OR SOLID CODE [N]

*6. (If liquid, enter code 1, and amount as percent of asphalt cement weight. If solid, enter code 2 and amount as percent of aggregate weight.) [N]

PREPARER Lance W. Duncan EMPLOYER BRE DATE 10-10-96

SPS-8 CONSTRUCTION DATA SHEET 8 PLANT-MIXED ASPHALT BOUND LAYERS MIXTURE PROPERTIES (CONTINUED)	* STATE CODE [2 8] * SPS PROJECT CODE [0 8] * TEST SECTION NO. [0 2]

*1. LAYER NUMBER (FROM SHEET 4) [4]

*2. TYPE OF SAMPLES [2]
SAMPLES COMPACTED IN LABORATORY... 1
SAMPLES TAKEN FROM TEST SECTION... 2

*3. TYPE ASPHALT PLANT [3]

BATCH PLANT... 1 DRUM MIX PLANT... 2

OTHER (SPECIFY)... 3 Hybrid (Standard Haven + Barber Green)

*4. TYPE OF ANTISTRIPPING AGENT USED [N]
(SEE TYPE CODES, TABLE A.21)
OTHER (SPECIFY) None Used

*5. AMOUNT OF ANTISTRIPPING AGENT USED LIQUID OR SOLID CODE [N]

*6. (If liquid, enter code 1, and amount as percent of asphalt cement weight. If solid, enter code 2 and amount as percent of aggregate weight.) [. N]

PREPARER Lance W. Dunman EMPLOYER BRE DATE 10-10-96

SPS-8 CONSTRUCTION DATA SHEET 9 PLANT-MIXED ASPHALT BOUND LAYERS PLACEMENT DATA	* STATE CODE [2 8] * SPS PROJECT CODE [0 8] * TEST SECTION NO. [0 2]

*1. DATE PAVING OPERATIONS BEGAN (Month-Day-Year) [10-03-96]

*2. DATE PAVING OPERATIONS COMPLETED (Month-Day-Year) [10-04-96]

*3 ASPHALT CONCRETE PLANT AND HAUL

	Type	Name	Haul Distance (Mi)	Time (Min)	Layer Numbers		
Plant 1	[3]	Lehman Roberts	[40]	[35]	[3]	[3]	[4]
Plant 2	[__]	_____	[___]	[___]	[__]	[__]	[__]
Plant 3	[__]	_____	[___]	[___]	[__]	[__]	[__]

Plant Type: Batch..... 1 Drum Mix.... 2 Other...3 Specify Hybrid

4. MANUFACTURER OF ASPHALT CONCRETE PAVER B/A W - Knox

5. MODEL DESIGNATION OF ASPHALT CONCRETE PAVER PF510 AP93-1

6. SINGLE PASS LAYDOWN WIDTH (Feet) [12.0]

7. AC BINDER COURSE LIFT
   Layer Number [03]
   Nominal First Lift Placement Thickness (Inches) [3.0]
   Nominal Second Lift Placement Thickness (Inches) [2.0]

8. AC SURFACE COURSE LIFT
   Layer Number [04]
   Nominal First Lift Placement Thickness (Inches) [2.0]
   Nominal Second Lift Placement Thickness (Inches) [__.__]

9. SURFACE FRICTION COURSE (If Placed)
   Layer Number [__ __]
   Nominal Placement Thickness (Inches) N/A [__.__]

10. TEST SECTION STATION OF TRANSVERSE JOINTS (within test section)
    Binder Course None [__ + __ __]
    Surface Course [__ + __ __]
    Surface Friction Course [__ + __ __]

11. LOCATION OF LONGITUDINAL SURFACE JOINT [1]
    Between lanes.. 1 Within lane.. 2
    (specify offset from O/S feet) [__ __.__]

12. SIGNIFICANT EVENTS DURING CONSTRUCTION (disruptions, rain, equip. problems, etc.) _____

PREPARER Thomas W. Duncan EMPLOYER BRE DATE 10-10-96

SPS-8 CONSTRUCTION DATA SHEET 10 PLANT-MIXED ASPHALT BOUND LAYERS COMPACTION DATA	* STATE CODE [7 8] * SPS PROJECT CODE [0 8] * TEST SECTION NO. [0 2]

*1. DATE PAVING OPERATIONS BEGAN (Month-Day-Year) [1 0 - 0 3 - 9 6]
*2. DATE PAVING OPERATIONS COMPLETED (Month-Day-Year) [1 0 - 0 4 - 9 6]
*3. LAYER NUMBER [3]

*4. MIXING TEMPERATURE (°F) [3 1 0.]

5. LAYDOWN TEMPERATURES (°F)
Mean..... 3 0 0.
Minimum..... 2 9 0.
Standard Deviation... _ _._
Number of Tests ..... _ _.
Maximum..... _ _ _.

ROLLER DATA

	Roller Code #	Roller Description	Gross Wt (Tons)	Tire Press. (psi)	Frequency (Vibr./Min)	Amplitude (Inches)	Speed (mph)
6	A	Steel-Whl Tandem	1 0.0				
7	B	Steel-Whl Tandem	_ _._				
8	C	Steel-Whl Tandem	_ _._				
9	D	Steel-Whl Tandem	_ _._				
10	E	Pneumatic-Tired	1 2.0	_ _ _ _.			
11	F	Pneumatic-Tired	_ _._	_ _ _ _.			
12	G	Pneumatic-Tired	_ _._	_ _ _ _.			
13	H	Pneumatic-Tired	_ _._	.			
14	I	Single-Drum Vibr.	_ _._		_ _ _ _.	. _ _ _	_ _._
15	J	Single-Drum Vibr.	_ _._		_ _ _ _.	. _ _ _	_ _._
16	K	Single-Drum Vibr.	_ _._		_ _ _ _.	. _ _ _	_ _._
17	L	Single-Drum Vibr.	_ _._		_ _ _ _.	. _ _ _	_ _._
18	M	Double-Drum Vibr.	_ _._		_ _ _ _.	. _ _ _	_ _._
19	N	Double-Drum Vibr.	_ _._		_ _ _ _.	. _ _ _	_ _._
20	O	Double-Drum Vibr.	_ _._		_ _ _ _.	. _ _ _	_ _._
21	P	Double-Drum Vibr.	_ _._		_ _ _ _.	. _ _ _	_ _._
22	Q	Other					

	COMPACTION DATA	First Lift	Second Lift	Third Lift	Fourth Lift
23	BREAKDOWN Roller Code (A-Q)	A	A	_	_
24	Coverages	_ 4.	_ 4.	_ _.	_ _.
25	INTERMEDIATE Roller Code (A-Q)	_	_	_	_
26	Coverages	_ _.	_ _.	_ _.	_ _.
27	FINAL Roller Code (A-Q)	E	E	_	_
28	Coverages	_ 4.	_ 4.	_ _.	_ _.
29	Air Temperature (°F)	_ 7 0.	_ 7 0.	_ _ _.	_ _ _.
30	Compacted Thickness (In)	3.0	2.0	_._	_._
31	Curing Period (Days)	_ _._	_ _._	_ _._	_ _._

Note: the 1st lift of Binder, which acted as A Base Layer, was laid previous to 10/3/96.

PREPARER Lisa D Duncan EMPLOYER BRE DATE 10-10-96

SPS-8 CONSTRUCTION DATA SHEET 10 PLANT-MIXED ASPHALT BOUND LAYERS COMPACTION DATA	* STATE CODE [2 8] * SPS PROJECT CODE [0 8] * TEST SECTION NO. [0 2]

*1. DATE PAVING OPERATIONS BEGAN (Month-Day-Year) [1 0 - 0 3 - 9 6]
*2. DATE PAVING OPERATIONS COMPLETED (Month-Day-Year) [1 0 - 0 4 - 9 6]
*3. LAYER NUMBER [4]

*4. MIXING TEMPERATURE (°F) [3 1 0 .]

5. LAYDOWN TEMPERATURES (°F)
Mean..... 3 0 0 .
Minimum..... 2 9 0 .
Standard Deviation... _ _ . _
Number of Tests ..... _ _ .
Maximum..... _ _ _ .

ROLLER DATA

	Roller Code #	Roller Description	Gross Wt (Tons)	Tire Press. (psi)	Frequency (Vibr./Min)	Amplitude (Inches)	Speed (mph)
6	A	Steel-Whl Tandem	1 0 . 0				
7	B	Steel-Whl Tandem	_ _ . _				
8	C	Steel-Whl Tandem	_ _ . _				
9	D	Steel-Whl Tandem	_ _ . _				
10	E	Pneumatic-Tired	1 2 . 0	_ _ _ _ .			
11	F	Pneumatic-Tired	_ _ . _	_ _ _ _ .			
12	G	Pneumatic-Tired	_ _ . _	_ _ _ _ .			
13	H	Pneumatic-Tired	_ _ . _	_ _ _ _ .			
14	I	Single-Drum Vibr.	_ _ . _		_ _ _ _ .	. _ _ _	_ _ . _
15	J	Single-Drum Vibr.	_ _ . _		_ _ _ _ .	. _ _ _	_ _ . _
16	K	Single-Drum Vibr.	_ _ . _		_ _ _ _ .	. _ _ _	_ _ . _
17	L	Single-Drum Vibr.	_ _ . _		_ _ _ _ .	. _ _ _	_ _ . _
18	M	Double-Drum Vibr.	_ _ . _		_ _ _ _ .	. _ _ _	_ _ . _
19	N	Double-Drum Vibr.	_ _ . _		_ _ _ _ .	. _ _ _	_ _ . _
20	O	Double-Drum Vibr.	_ _ . _		_ _ _ _ .	. _ _ _	_ _ . _
21	P	Double-Drum Vibr.	_ _ . _		_ _ _ _ .	. _ _ _	_ _ . _
22	Q	Other					

	COMPACTION DATA	First Lift	Second Lift	Third Lift	Fourth Lift
23	BREAKDOWN Roller Code (A-Q)	A	_	_	_
24	Coverages	_ 4 .	_ _ .	_ _ .	_ _ .
25	INTERMEDIATE Roller Code (A-Q)	_	_	_	_
26	Coverages	_ _ .	_ _ .	_ _ .	_ _ .
27	FINAL Roller Code (A-Q)	E	_	_	_
28	Coverages	_ 4 .	_ _ .	_ _ .	_ _ .
29	Air Temperature (°F)	_ 7 0 .	_ _ _ .	_ _ _ .	_ _ _ .
30	Compacted Thickness (In)	2 . 0	_ . _	_ . _	_ . _
31	Curing Period (Days)	_ _ . _	_ _ . _	_ _ . _	_ _ . _

PREPARER Lara W. Dunn EMPLOYER BRE DATE 10/09/96

SPS-8 CONSTRUCTION DATA SHEET 11 PLANT-MIXED ASPHALT BOUND LAYERS DENSITY AND PROFILE DATA	* STATE CODE [2 8] * SPS PROJECT CODE [0 8] * TEST SECTION NO. [0 2]

1. NUCLEAR DENSITY MEASUREMENTS

LAYER TYPE	Binder Course	Surface Course	Surface Friction Layer
Measurement Method (A, B, C)[1]	A	A	NA
Number of Measurement	12	12	
Average (pcf)	134.6	135.6	
Maximum (pcf)	141.0	139.3	
Minimum (pcf)	131.1	131.3	
Standard Deviation (pcf)	2.8	2.6	
Layer Number	03	04	

[1] Measurement Method (Backscatter... A) Direct Transmission... B Air Gap... C

2. MANUFACTURER OF NUCLEAR DENSITY GAUGE TRoxler For Binder

3. NUCLEAR DENSITY GAUGE MODEL NUMBER 3440 For Binder

4. NUCLEAR DENSITY GAUGE IDENTIFICATION NUMBER

5. NUCLEAR GAUGE COUNT RATE FOR STANDARDIZATION

6. PROFILOGRAPH MEASUREMENTS

Profilograph Type California... 1 Rainhart... 2 Ames... 3	3
Profile Index (Inches/Mile)	07
Interpretation Method Manual.. 1 Mechanical.. 2 Computer.. 3	1
Height of Blanking Band (Inches)	0.02
Cutoff Height (Inches)	0.05

7. SURFACE PROFILE USED AS BASIS OF INCENTIVE PAYMENT? (YES, NO) NO

PREPARER E. D. Dunnam EMPLOYER BRE DATE 10/24/96

SPS-8 CONSTRUCTION DATA SHEET 12 LAYER THICKNESS MEASUREMENTS	* STATE CODE [2 5] * SPS PROJECT CODE [0 8] * TEST SECTION NO. [0 2]

SHEET ____ OF ____

STATION NUMBER	OFFSET (Inches)	LAYER THICKNESS MEASUREMENTS (Inches)			
		DENSE GRADED AGGREGATE BASE	PORTLAND CEMENT CONCRETE SURFACE	ASPHALT SURFACE AND BINDER	SURFACE FRICTION LAYER
0+00	0 36 72 108 144				
0+50	0 36 72 108 144				
1+00	0 36 72 108 144				
1+50	0 36 72 108 144				
2+00	0 36 72 108 144				
2+50	0 36 72 108 144				
3+00	0 36 72 108 144				
LAYER NUMBER		02		03	

PREPARER Lore W. Dunn EMPLOYER BRE DATE 11/01/96

SPS-8 CONSTRUCTION DATA SHEET 12 LAYER THICKNESS MEASUREMENTS	* STATE CODE [7 8] * SPS PROJECT CODE [0 8] * TEST SECTION NO. [0 2]

SHEET ____ OF ____

STATION NUMBER	OFFSET (Inches)	LAYER THICKNESS MEASUREMENTS (Inches)			
		DENSE GRADED AGGREGATE BASE	PORTLAND CEMENT CONCRETE SURFACE	ASPHALT SURFACE AND BINDER	SURFACE FRICTION LAYER
3+50	0 36 72 108 144				
4+00	0 36 72 108 144				
4+50	0 36 72 108 144				
5+00	0 36 72 108 144				
__-__					
__+__					
__+__					
LAYER NUMBER		02		03	

PREPARER Lynn W. Dunnan EMPLOYER BRE DATE 11/01/96

SPS-8 CONSTRUCTION DATA SHEET 13 UNBOUND AGGREGATE BASE MATERIAL PLACEMENT	* STATE CODE [2 8] * SPS PROJECT CODE [0 8] * TEST SECTION NO. [0 2]

*1. UNBOUND BASE MATERIAL PLACEMENT BEGAN (Month-Day-Year) [0 9-2 5-9 6]

*2. UNBOUND BASE MATERIAL PLACEMENT COMPLETED (Month-Day-Year) [1 0-0 2-9 6]

*3. LAYER NUMBER (From Sheet 4) [2]

PRIMARY COMPACTION EQUIPMENT

*4. CODE TYPE [2]

COMPACTION TYPE CODES
Pneumatic - Tired... 1 Steel Wheel Tandem... 2 Single Drum Vibr.... 3
Double Drum Vibr.... 4
Other (Specify)... 5 _____

*5. GROSS WEIGHT (TONS) [1 0.0]

*6. LIFT THICKNESSES
Nominal First Lift Placement Thickness (inches) [0 6]
Nominal Second Lift Placement Thickness (inches) [0 6]
Nominal Third Lift Placement Thickness (inches) [ ]
Nominal Fourth Lift Placement Thickness (inches) [ ]

DENSITY DATA IS RECORDED ON SAMPLING DATA SHEET 8-1

7. SIGNIFICANT EVENTS DURING CONSTRUCTION (DISRUPTIONS, RAIN, EQUIPMENT PROBLEMS, ETC.) _____

PREPARER Fred W Wenner EMPLOYER BRE DATE 11-1-96

SPS-8 CONSTRUCTION DATA SHEET 14 SUBGRADE PREPARATION	* STATE CODE [2 8] * SPS PROJECT CODE [0 8] * TEST SECTION NO. [0 2]

*1. SUBGRADE PREPARATION BEGAN (Month-Day-Year) [8-15-96]

*2. SUBGRADE PREPARATION COMPLETED (Month-Day-Year) [8-20-96]

PRIMARY COMPACTION EQUIPMENT

*3. CODE TYPE [2]

COMPACTION EQUIPMENT TYPE CODES
Sheepsfoot... 1 Pneumatic Tired... 2 Steel Wheel Tandem... 3
Single Drum Vibr.... 4 Double Drum Vibr.... 5
Other (Specify)... 6 _____

*4. GROSS WEIGHT (TONS) [10.0]

		TYPE	PERCENT
*5.	STABILIZING AGENT 1	[N]	[.]
*6.	STABILIZING AGENT 2	[N]	[.]

STABILIZING AGENT TYPE CODES
Portland Cement... 1 Lime... 2 Fly Ash, Class C... 3
Fly Ash, Class N... 4
Other (Specify)... 5 _____

*7. TYPICAL LIFT THICKNESS (INCHES) [8]
(For Fill Sections Only)

DENSITY DATA IS RECORDED ON SAMPLING DATA SHEET 8-1

8. SIGNIFICANT EVENTS DURING CONSTRUCTION (DISRUPTIONS, RAIN, EQUIPMENT PROBLEMS, ETC.) Intermittent Rain slowed const of subgrade.

PREPARER _____ EMPLOYER _____ DATE _____

SPS-8 CONSTRUCTION DATA SHEET 15 CUT-FILL SECTION LOCATIONS	* STATE CODE [2 8] * SPS PROJECT CODE [0 8] * TEST SECTION NO. [0 2]

ORDER	*1 CUT-FILL TYPE[1]	TEST SECTION STATION NUMBER	
		*2 START	*3 END
1	2	0 + 0 0	5 + 0 0
2		+	+
3		+	+
4		+	+
5		+	+
6		+	+
7		+	+
8		+	+
9		+	+
10		+	+

NOTES:

1. Indicate the type of subgrade construction with one of the following:

   Cut... 1 Fill... 2 At-Grade... 3

2. Use one line for each cut, fill or at-grade zone present within the section boundaries.

PREPARER Terry W. Dumas EMPLOYER BRE DATE 10-10-96

SPS-8 CONSTRUCTION DATA SHEET 16 SUBGRADE EXCAVATION AND BACKFILLING SKETCH	* STATE CODE [2 8] * SPS PROJECT CODE [0 8] * TEST SECTION NO. [0 2]

PREPARER [signature] EMPLOYER BRE DATE 10-10-96

SPS-8 CONSTRUCTION DATA SHEET 28 MISCELLANEOUS CONSTRUCTION NOTES AND COMMENTS	* STATE CODE [2 8] * SPS PROJECT CODE [0 8] * TEST SECTION NO. [0 2]

Provide any miscellaneous comments and notes concerning construction operations which may have an influence on the ultimate performance of the test sections or which may cause undesired performance differences to occur between test sections. Also include any quality control measurements or data for which space is not provided on other forms. Provide an indication of the basis for such measurements, such as an ASTM, AASHTO, or Agency standard test designation.

I noticed that when the guardrail was installed after the surface layer was laid, 2-3 weeks later, the guard rail was Anchorded to the road. this caused severe cracking of the HMAC surface layer in the vicinity of the guardrail Posts. This of course happened outside of the test section and might affect the shoulder only; unless water goes into the cracks, pumps, then causes damage at a later time to the test section

PREPARER Lee W. Dunn EMPLOYER BRE DATE 10-10-96

SPS-8 CONSTRUCTION DATA SHEET 28 MISCELLANEOUS CONSTRUCTION NOTES AND COMMENTS	* STATE CODE [2 8] * SPS PROJECT CODE [0 8] * TEST SECTION NO. [0 2]

Provide any miscellaneous comments and notes concerning construction operations which may have an influence on the ultimate performance of the test sections or which may cause undesired performance differences to occur between test sections. Also include any quality control measurements or data for which space is not provided on other forms. Provide an indication of the basis for such measurements, such as an ASTM, AASHTO, or Agency standard test designation.

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PREPARER Lee W. Dunnaway EMPLOYER BRE DATE 10-10-96

APPENDIX E

PHOTOGRAPHS

Photo 1. HMAC Binder Mix, Section 280802

Photo 2. View of Base Material, Section 280802

Photo 3. Asphalt Plant

Photo 4. Surface Aggregate Gradation (Top) and Binder Aggregate Gradation (Bottom)

Photo 5. Postconstruction 4″ Coring of Surface Layer

Photo 6. Postconstruction 4″ Core

Photo 7. Postconstruction 4″ Filled Core Holes

Photo 8. Guardrail Construction

Photo 9. Final Surface, Section 280802